VOLUME XXXI NUMBER FOUR

THE NATIONAL GEOGRAPHIC MAGAZINE

APRIL, 1917

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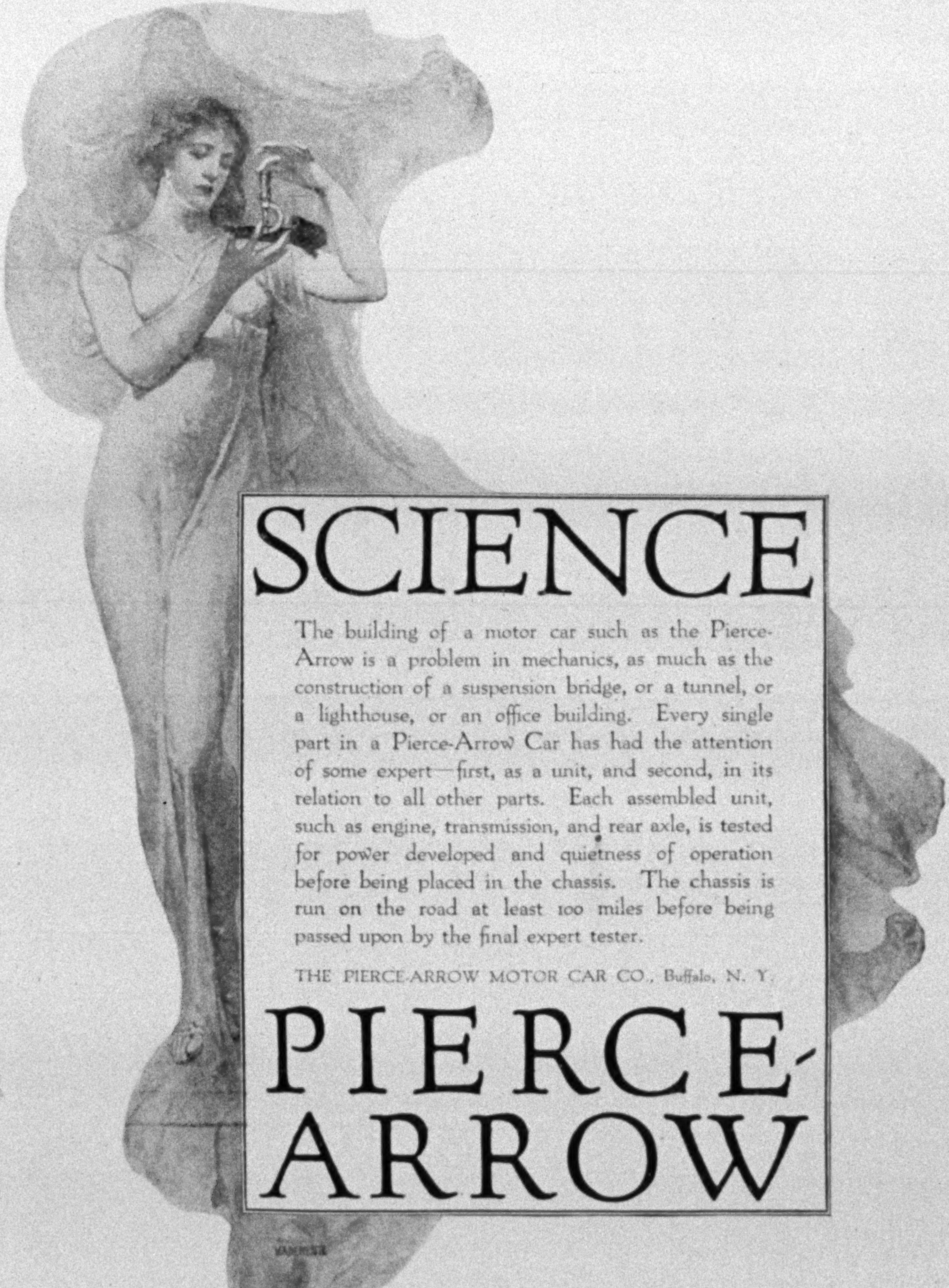
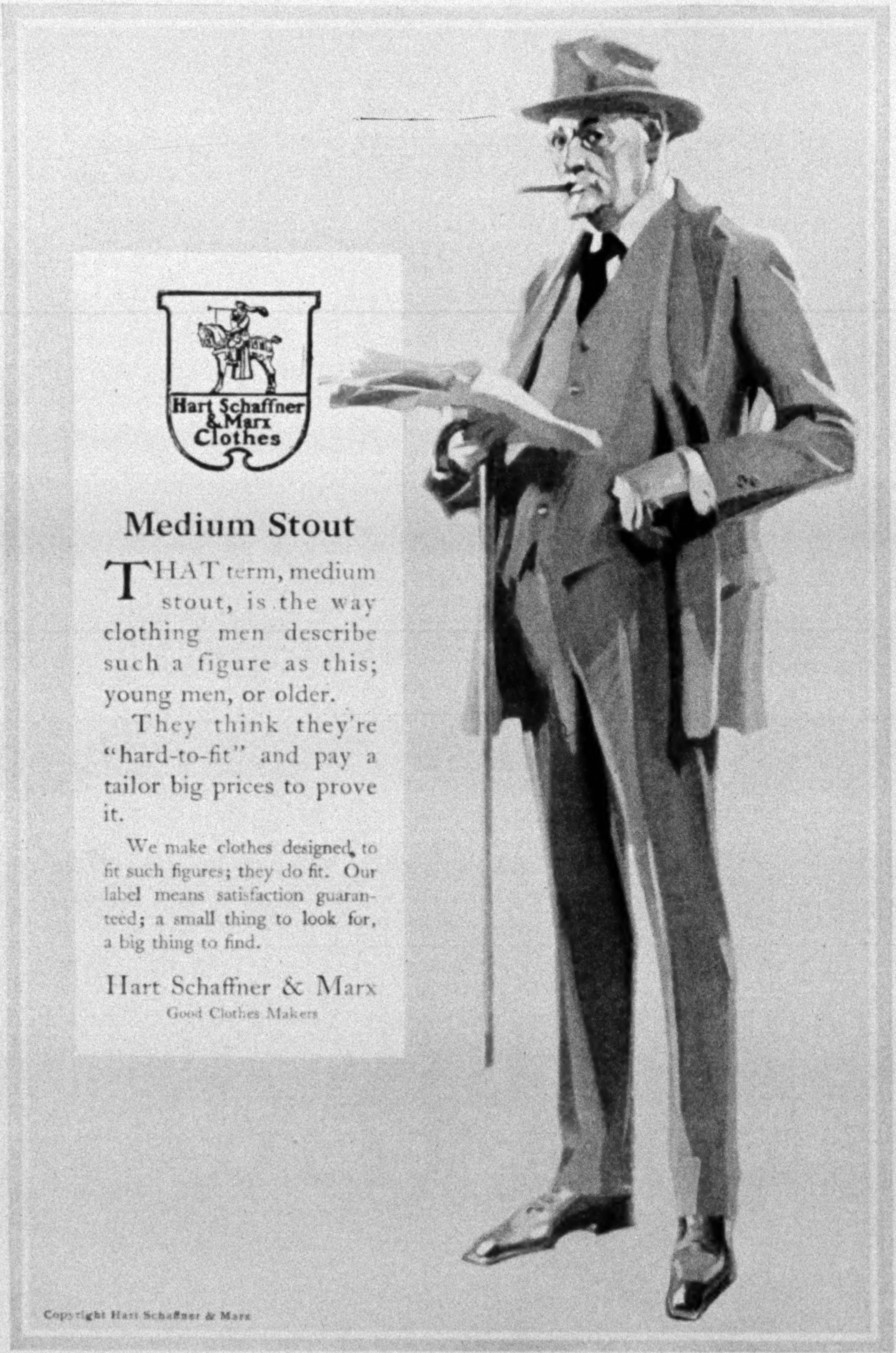


SCIENCE

The building of a motor car such as the Pierce-Arrow is a problem in mechanics, as much as the construction of a suspension bridge, or a tunnel, or a lighthouse, or an office building. Every single part in a Pierce-Arrow Car has had the attention of some expert—first, as a unit, and second, in its relation to all other parts. Each assembled unit, such as engine, transmission, and rear axle, is tested for power developed and quietness of operation before being placed in the chassis. The chassis is run on the road at least 100 miles before being passed upon by the final expert tester.

THE PIERCE-ARROW MOTOR CAR CO., Buffalo, N. Y.

PIERCE-ARROW



Hart Schaffner & Marx Clothes

Medium Stout

THAT term, medium stout, is the way clothing men describe such a figure as this; young men, or older.

They think they're "hard-to-fit" and pay a tailor big prices to prove it.

We make clothes designed to fit such figures; they do fit. Our label means satisfaction guaranteed; a small thing to look for, a big thing to find.

Hart Schaffner & Marx
Good Clothes Makers

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$1150 F. o. b. Racine
Mitchell Junior—a 40 h. p. Six
120-inch Wheelbase

Mitchell SIXES

$1460 F. o. b. Racine
7-Passenger—48 Horsepower
127-inch Wheelbase

Plus 31 Extras

In the Mitchell there are 31 extras added to the usual type of fine car. Each is something you will want.

These extras will cost us, on this year's output, about $4,000,000. They cost you nothing, because they are paid for by factory efficiency.

The Mitchell now offers, in every vital part, 100 per cent over-strength. That is twice our old margin of safety.

This means a lifetime car. Several Mitchells have been run over 200,000 miles each. It means a safe car, a car of low upkeep. Over 440 parts are built of toughened steel.

Due to John W. Bate

The Mitchell extra values are due to John W. Bate. He built and equipped this 45-acre plant to build this one type economically. His methods have cut our factory cost in two.

TWO SIZES

Mitchell —a 7-passenger Six with 127-inch wheelbase and a highly - developed 48 - horsepower motor. 31 extra features.

Price $1460, f. o. b. Racine

Mitchell Junior —a 5-passenger Six with 120-inch wheelbase and a 40-horsepower motor. 26 extra features.

Price $1150, f. o. b. Racine

Also six styles of enclosed and convertible bodies. Also new Club Roadster.

This year our new body plant brings another big saving. And from it we've added 24 per cent to the cost of finish, upholstery and trimming. The Mitchell is now the beauty car of its class.

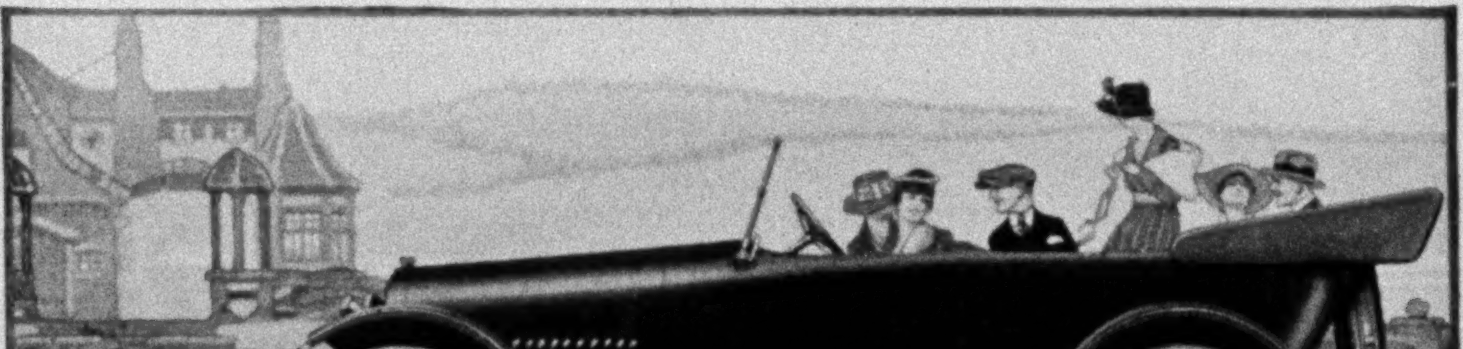
They Are Unique

Mitchells are unique in over-strength, in beauty and equipment. The body styles are exclusive—designed by our artists, built by our own craftsmen. No attraction is omitted.

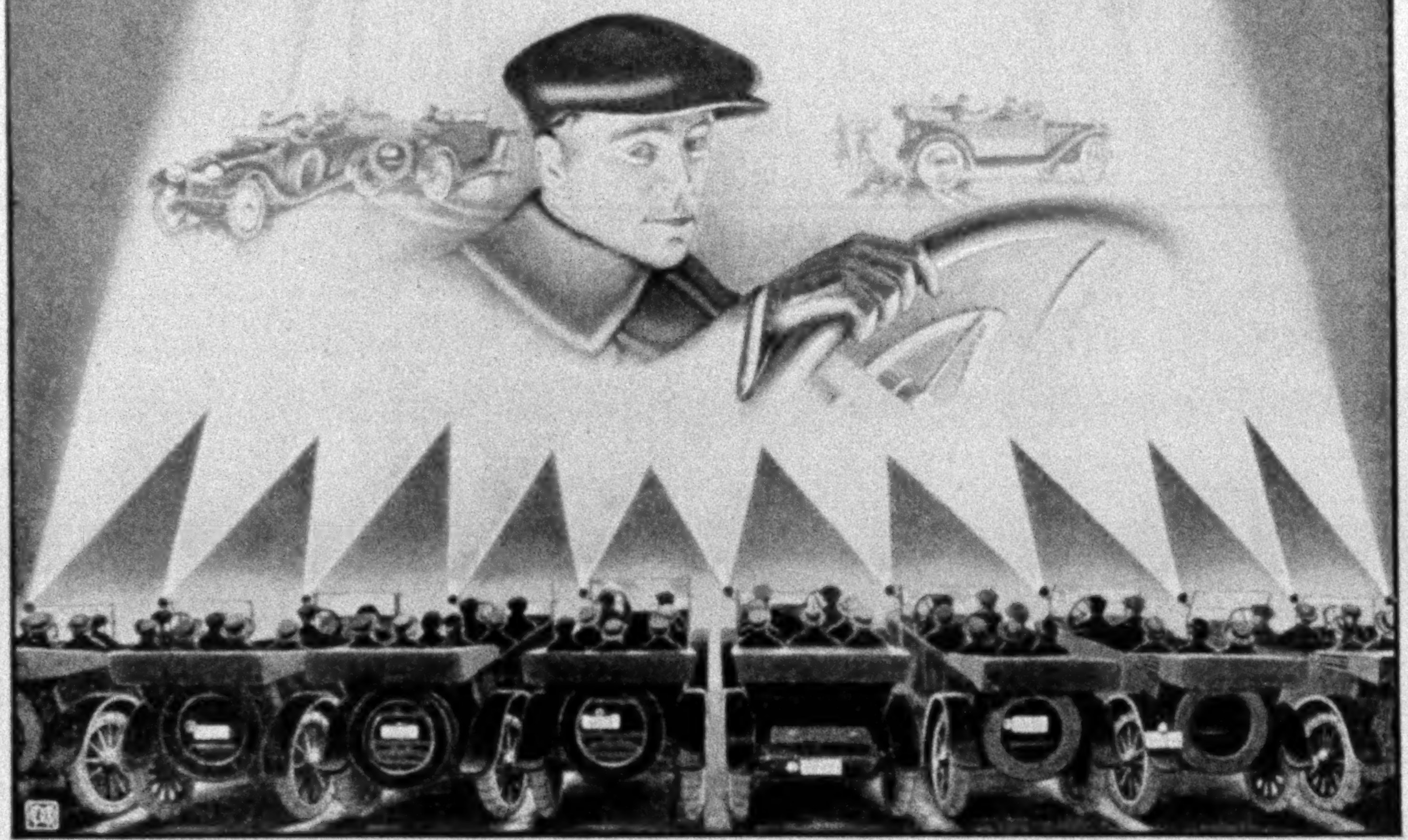
Mr. Bate has traveled half the world to gain ideas for Mitchells. In 1913 he spent a year in Europe. He has worked out more than 700 improvements.

Go see the results of his methods. See what a Six $1150 buys in the Mitchell Junior. See the many features in the larger Mitchell, which other cars omit. The difference will amaze you.

MITCHELL MOTORS
COMPANY, Inc.
Racine, Wis., U. S. A.



The Slip-Shod Driver



Help Us Focus the Condemning Light of Public Opinion on
THE SLIP-SHOD DRIVER—*The Greatest Enemy of Motoring*

The *slip*-shod driver is one who leaves tire chains in the locker when careful drivers put them on their wheels. Driving with chainless tires over wet-slippery-skiddy streets he gambles with the lives and property of everyone in his path.

Only two things can reach the *slip*-shod driver—fear of the law and the mightier power of public opinion. So, we ask you to help us arouse and concentrate a public opinion that will compel the *slip*-shod driver to use intelligence and judgment that will safeguard all of us against all preventable accidents.

Concentrate your light of condemnation on every driver who cuts corners; who does not signal when stopping or turning; who does not give a warning signal of his approach; who exceeds a safe speed limit; who does not inspect his brakes and stearing gear, and who does not stop to put on tire chains at the first indication of wet, slippery, skiddy streets.

Help Us Insure Motoring Safety for Everyone.

AMERICAN CHAIN COMPANY, Incorporated
SOLE MANUFACTURERS OF WEED CHAINS
Bridgeport, Connecticut.
In Canada; Dominion Chain Company, Ltd., Niagara Falls, Ontario.

The above advertisement was suggested by a car owner who has the best interests of motoring at heart. Please show it to all slip-shod drivers you meet and ask them to spread its doctrines to others in their class. Help forge an endless chain campaign to insure motoring safety for everyone.

How Hudson Solved the Gasoline Problem

Now Furnished on the New Light Super-Six

The gasoline saver is one more new invention of the Hudson Super-Six.

It was shown for the first time at the New York Automobile Show in January. Now most all Hudson dealers are showing the new cars equipped with this and ten other important new features. The gasoline saver is the only new feature shown on automobiles at this year's shows.

Overcomes the Poor Gasoline

Hard starting and wasteful gasoline consumption due to cold weather and the low-grade gasoline are overcome. Radiator and hood covers are not needed on the new Hudson Super-Sixes, even in the coldest weather.

This device has been in use on hundreds of Hudson Super-Sixes during the coldest winter weather. Its effectiveness has been proved. It is as easily operated as the damper on a stove.

Low-grade gasoline gives low mileage and is wasteful and harmful to the engine, unless the motor is operated steadily at a high temperature.

Primer Insures Easy Starting

In zero weather, even at 20 below, the new Hudson Super-Six motor starts. The primer is another new feature of the new Super-Six.

On the new cars there are also other worth-while features you should see. There is the new plaited upholstering, more attractive door fasteners, hard rubber handles, an improved body finish, and other details you can see. And then we have made many improvements in the building of the car. The car that last year won every worth-while record is a much better automobile now, because we have learned to build them better.

We made those records of endurance for acceleration and speed with cars of the earlier production. No one has yet equaled anything we have done with stock Super-Six cars. And yet the cars we turn out today are infinitely better because of the increased skill and experience Hudson workmen have acquired in building the 25,000 cars that were produced last year.

Think What a Year Has Shown

Remember what was claimed for the Super-Six one year ago. Then we had only our own records to show—records proving the Hudson Super-Six the fastest stock car built.

We then had established only the 100-mile and the one-hour records for a fully equipped stock touring car. But since we have won the 24-hour record for a stock chassis, the Transcontinental Run both ways, the fastest stock chassis mile, and have outsold any other high-grade car in the world. So if you want a fine car that out-performs any other car that is built, your choice must be a Hudson Super-Six.

Buyers Waited for Months

At this time last season orders exceeded our production by 8,000. At no time during the season were there enough Hudsons to go around. From this you can see what the demand will be this year. We are only producing 30,000 cars as against last year's 25,000 because we cannot build more and build them well. That is not a large increase. It shows, however, that if you want a Hudson you cannot afford to postpone buying. Unless you act now you may be like other thousands who will be disappointed this year because they could not get prompt deliveries.

Don't fail to see the gasoline saver.

HUDSON SUPER SIX

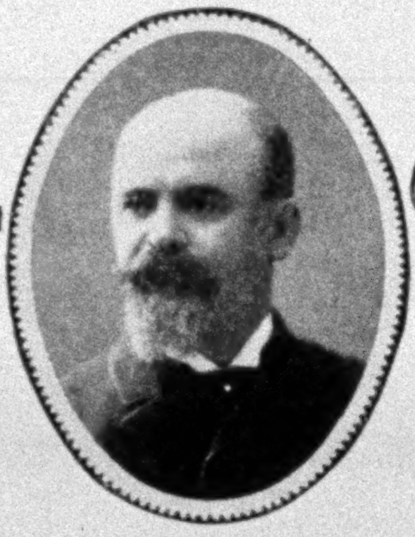
Phaeton, 7-passenger	$1650	Town Car Landaulet	$3025
Cabriolet, 3-passenger	1950	Limousine	2925
Touring Sedan	2175	Limousine Landaulet	3025
Town Car	2925		

(All Prices f. o. b. Detroit)

HUDSON MOTOR CAR COMPANY, DETROIT, MICHIGAN

BEEMAN'S

ORIGINAL PEPSIN



CHEWING GUM

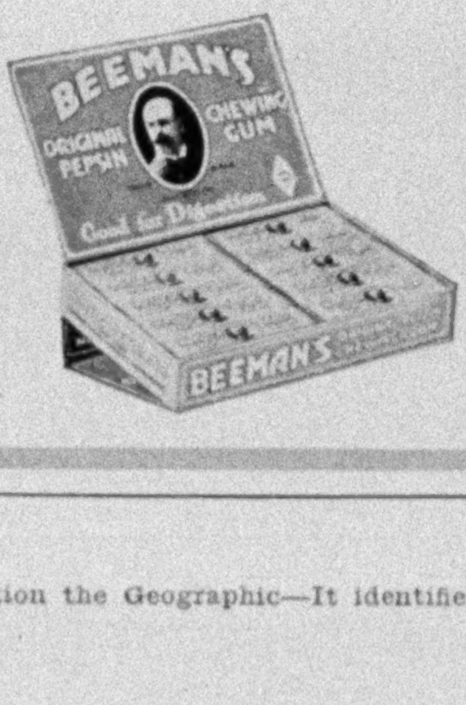
INSOMNIA DUE TO INDIGESTION

When indigestion or dyspepsia is the cause of insomnia, one of the most satisfactory methods of securing relief is to chew a piece of Beeman's Pepsin Gum—a chewing gum made from a scientific formula of my own.

If you suffer at all from insomnia, always have a piece of my gum within easy reach, for many times it may turn a sleepless night into one of restful slumber.

Dr E. E. Beeman

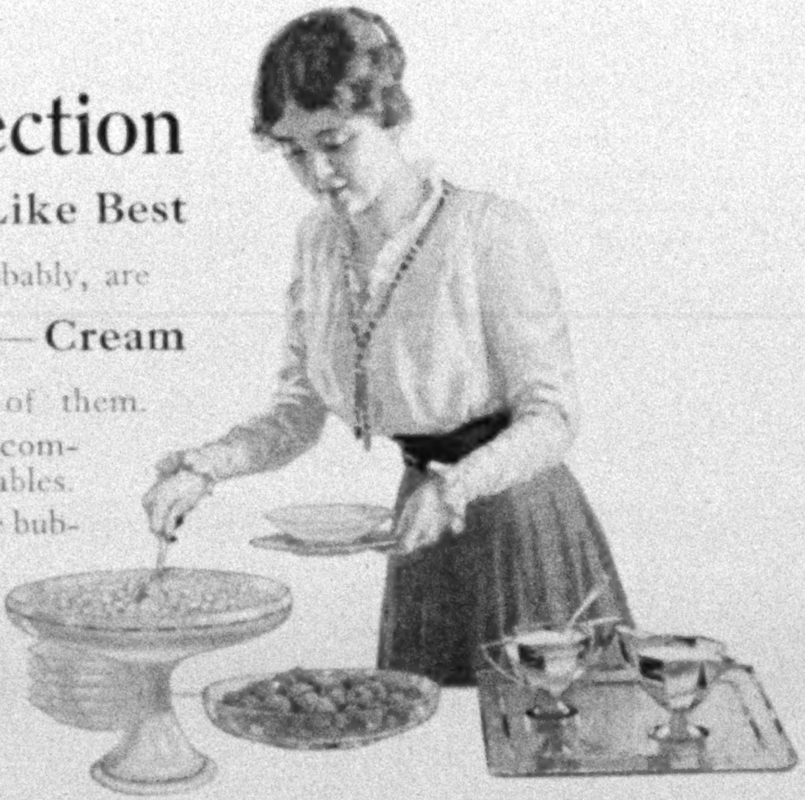
Doctor E. E. Beeman


BEEMAN'S
ORIGINAL PEPSIN
CHEWING GUM
Good for Digestion
BEEMAN'S

CHICLE

AMERICAN CHICLE COMPANY

Making a
Food Confection
of Four Things Folks Like Best



The four best-liked foods, probably, are

Fruits — Nuts — Sugar — Cream

Most sweetmeats are made of them.

They are now being served—in combination—on a million breakfast tables.

But, instead of nuts, use nut-like bubbles of wheat or rice. They are thin and crisp and flaky. And they taste like toasted nut meats.

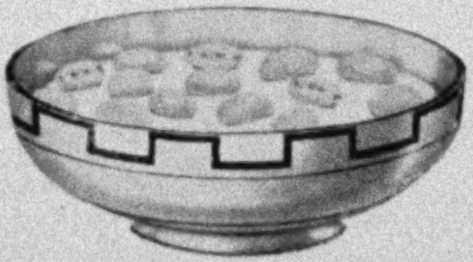
Prof. Anderson rather objects to treating Puffed Grains as tidbits. To him they are scientific whole-grain foods. They are shot from guns. Every food cell is exploded for easy, complete digestion.

But Puffed Grains got their world-wide welcome because they are delightful. No other grain food so fascinates the young. So we urge their daintiness to bring you their good.

You will never find a morning dish folks like so well as Puffed Grains.

Puffed Wheat **Puffed Rice**
and Corn Puffs
Each 15c Except in Far West

The Dairy Dish



Thousands of men now avoid dulling luncheons by eating Puffed Grains in milk. Thousands of children go to bed on this ideal good-night dish.

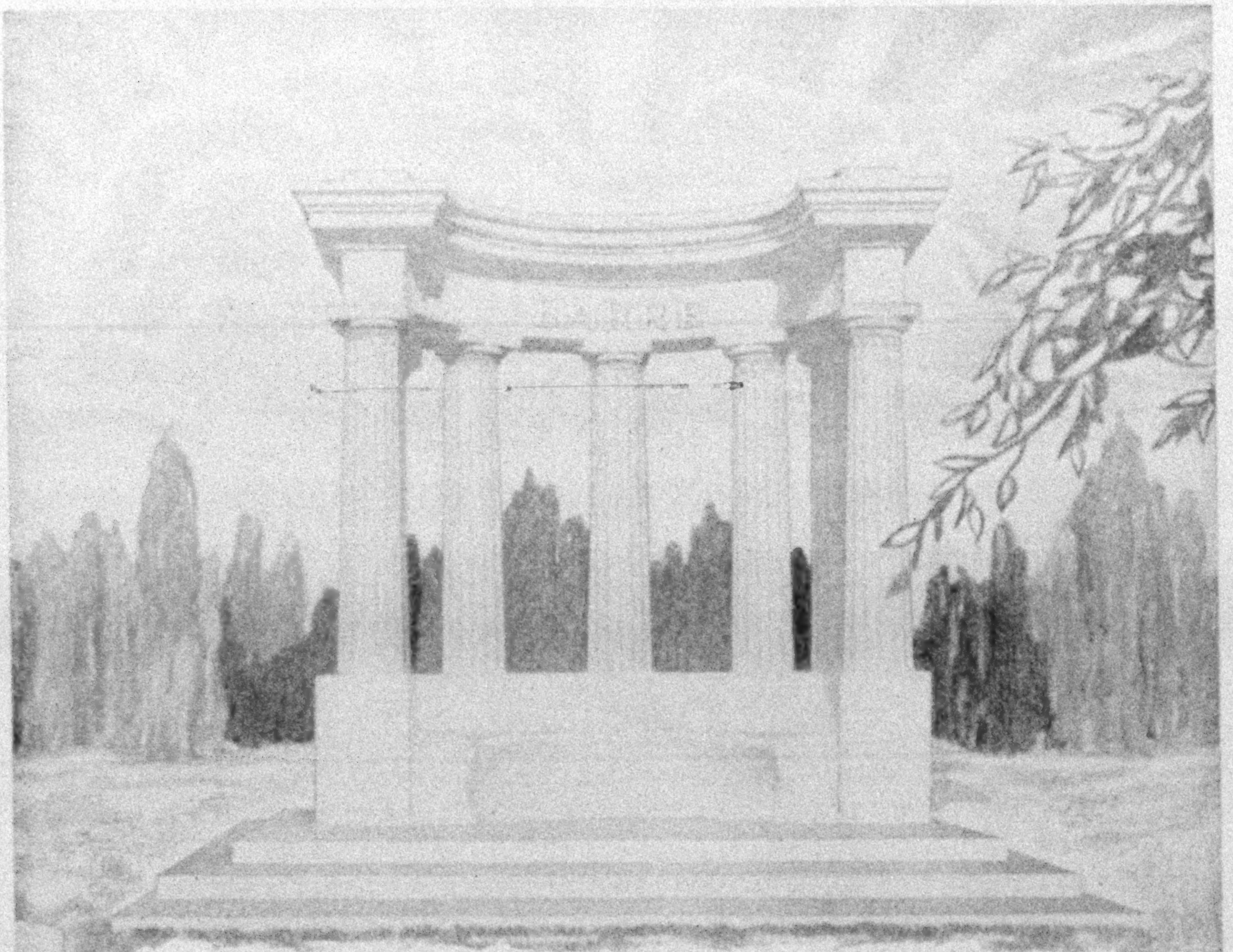
It means a whole-grain food, with every element anybody needs. It means easy digestion—no tax on the stomach—for the food cells are all exploded.

And it means toasted grain bubbles, flimsy and crisp, with a flavor that never was imitated.

Three grains are now prepared in this form, giving you variety. And they should be served in place of flour foods wherever they apply. Keep all three kinds on hand.

The Quaker Oats Company
Sole Makers

(1555)



A MEMORIAL is a sentinel—standing silent guard until the gates of eternity swing wide. There is no substance so fitting for this sacred privilege and duty as

BARRE GRANITE

The Rock Beautiful—and Everlasting

Its firm texture, enduring quality, its beauty—make it Nature's own material for monumental purposes.

Barre Granite has no flaws or imperfections. Its low absorptive power prevents it from becoming discolored. Its density and hardness permit any treatment.

The Rockefeller, Heinz, Schley, Armour, Fleischman, Tarkington, Potter Palmer, Anheuser, Leland Stanford, and thousands of other memorials have been cut from Barre Granite.

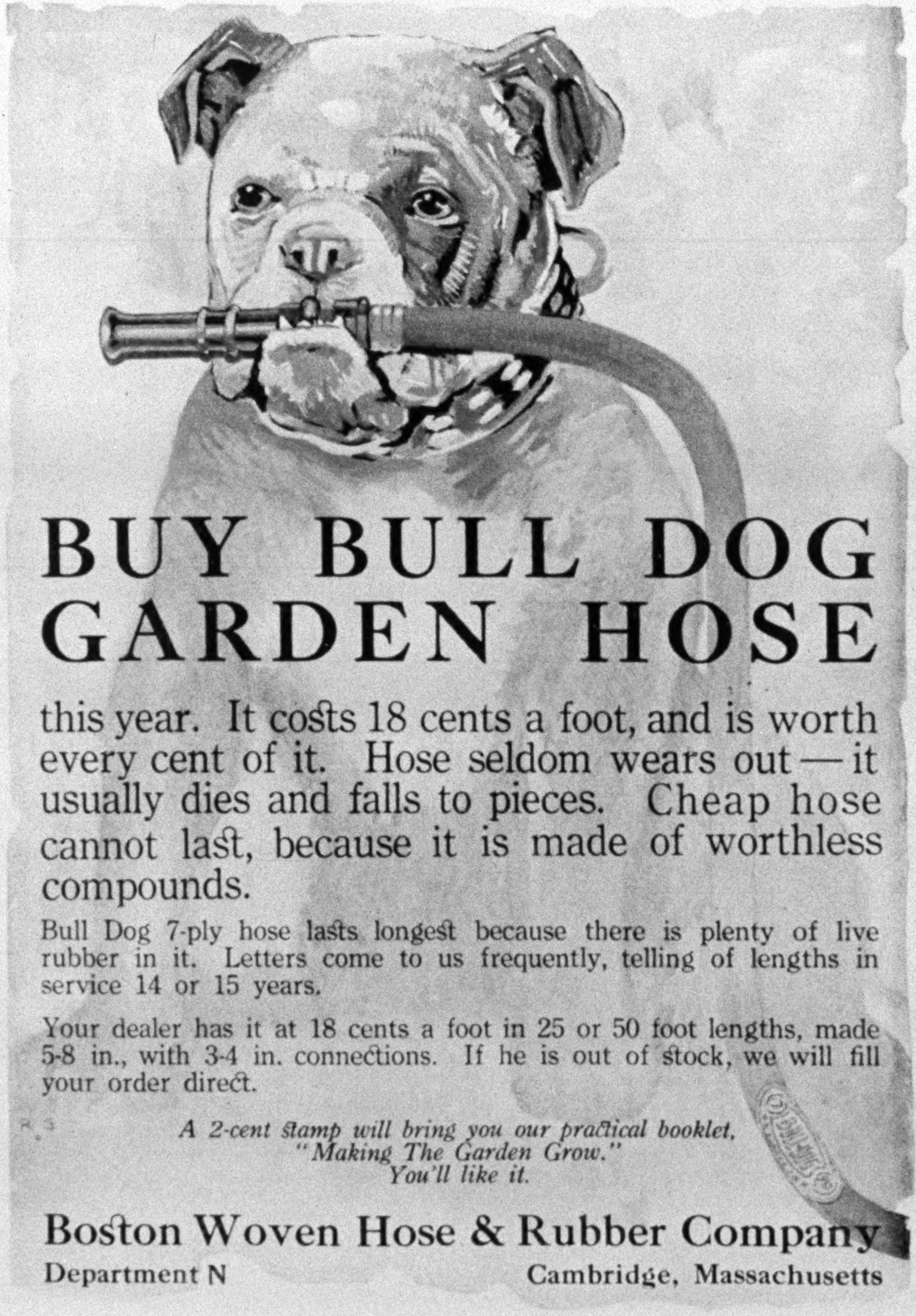
Be sure to specify that every part of your memorial be made of genuine Barre Granite. Make the erection of a monument your own task rather than leaving it to others. Ask your monument dealer about Barre Granite. See specimens in your local cemeteries. And write for a copy of *"Memorial Masterpieces."*

BARRE QUARRIERS AND MANUFACTURERS ASS'N, Dept. B, BARRE, VT.
THE GRANITE CENTER OF THE WORLD

But lo, there breaks a yet more glorious day

Kelly-Springfield
Tires

You get what you pay for in most any tire you buy. The trouble is that you expect to get from other tires what others get from Kelly-Springfields.



BUY BULL DOG GARDEN HOSE

this year. It costs 18 cents a foot, and is worth every cent of it. Hose seldom wears out — it usually dies and falls to pieces. Cheap hose cannot last, because it is made of worthless compounds.

Bull Dog 7-ply hose lasts longest because there is plenty of live rubber in it. Letters come to us frequently, telling of lengths in service 14 or 15 years.

Your dealer has it at 18 cents a foot in 25 or 50 foot lengths, made 5-8 in., with 3-4 in. connections. If he is out of stock, we will fill your order direct.

A 2-cent stamp will bring you our practical booklet,
"Making The Garden Grow."
You'll like it.

Boston Woven Hose & Rubber Company
Department N **Cambridge, Massachusetts**

JOHNS-MANVILLE
ASBESTOS · ROOFING

JOHNS-MANVILLE SERVICE
COVERS THE CONTINENT

No more convincing testimonial for the life of Johns-Manville Asbestos Roofing exists than mother earth's own history. For ages asbestos has repelled the fiercest heats, the shock of quick cooling, and earth's corrosive agents. Unscathed after all these tests, it comes to you felted into sheets, ready to apply to your buildings—a natural roofing material whose inherent properties answer every requirement that you would include in specifying an ideal roofing.

No other roofing material has such a past behind it—no other roofing has such a future before it on your building.

For flat roofs, J-M Asbestos Built-Up Roofing. For sloping roofs, J-M Flextone Asbestos Roofing. For skeleton framing, J-M Corrugated Asbestos Roofing. For homes, J-M Transite Asbestos Shingles. All these roofings are backed by

J-M ROOFING RESPONSIBILITY

—a principle that certifies the service of every Johns-Manville Asbestos Roofing. You can register your roofing with us, and thus be assured of complete satisfaction in the service it gives.

H. W. JOHNS-MANVILLE CO.
NEW YORK CITY
10 Factories—Branches in 55 Large Cities

Foster Building,
New York City
F. E. Townsend,
Architect

X-Ray Lighting
from Concealed Sources

He Turned the Light Shade Upside Down

IN a sick room, a distracted husband turned the light shade upside down to relieve the patient's petulance.

It was a touch of inspiration—the beginning of X-Ray Lighting.

That makeshift indirect light of the despairing husband showed the way to better lighting. It established the guiding principle fundamental to the X-Ray Lighting system.

The source of the light is always out of sight.

So, from the lofty Woolworth tower to the smallest article in the country dealer's show-case—wherever you do not see the light, but do see the object alone, beautifully and strikingly illuminated—*there* is X-Ray Lighting.

Wherever there is attractive lighting that rests and comforts the eyes, from the searching, high-intensity illumination of the hospital operating room to the subdued glow of the motion-picture theater—and you do not see the light source—*there* is X-Ray Lighting.

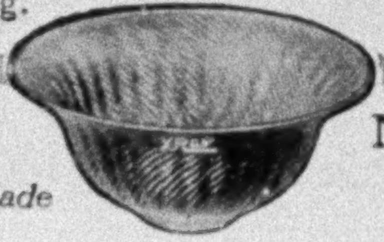
Whether it is source-concealed direct X-Ray light for the rushing factory, or source-concealed indirect X-Ray light for the quiet home; in either case it is a sunny, daylight brightness, radiantly uniform and clear.

In every case the light is concealed in the opaque X-Ray reflector, with its wonderful silvered corrugations that diffuse and temper the light perfectly.

Directed ceilingward, so that no part of the light reaches the eye directly, X-Ray reflectors produce real (not semi) indirect lighting, efficiently and economically.

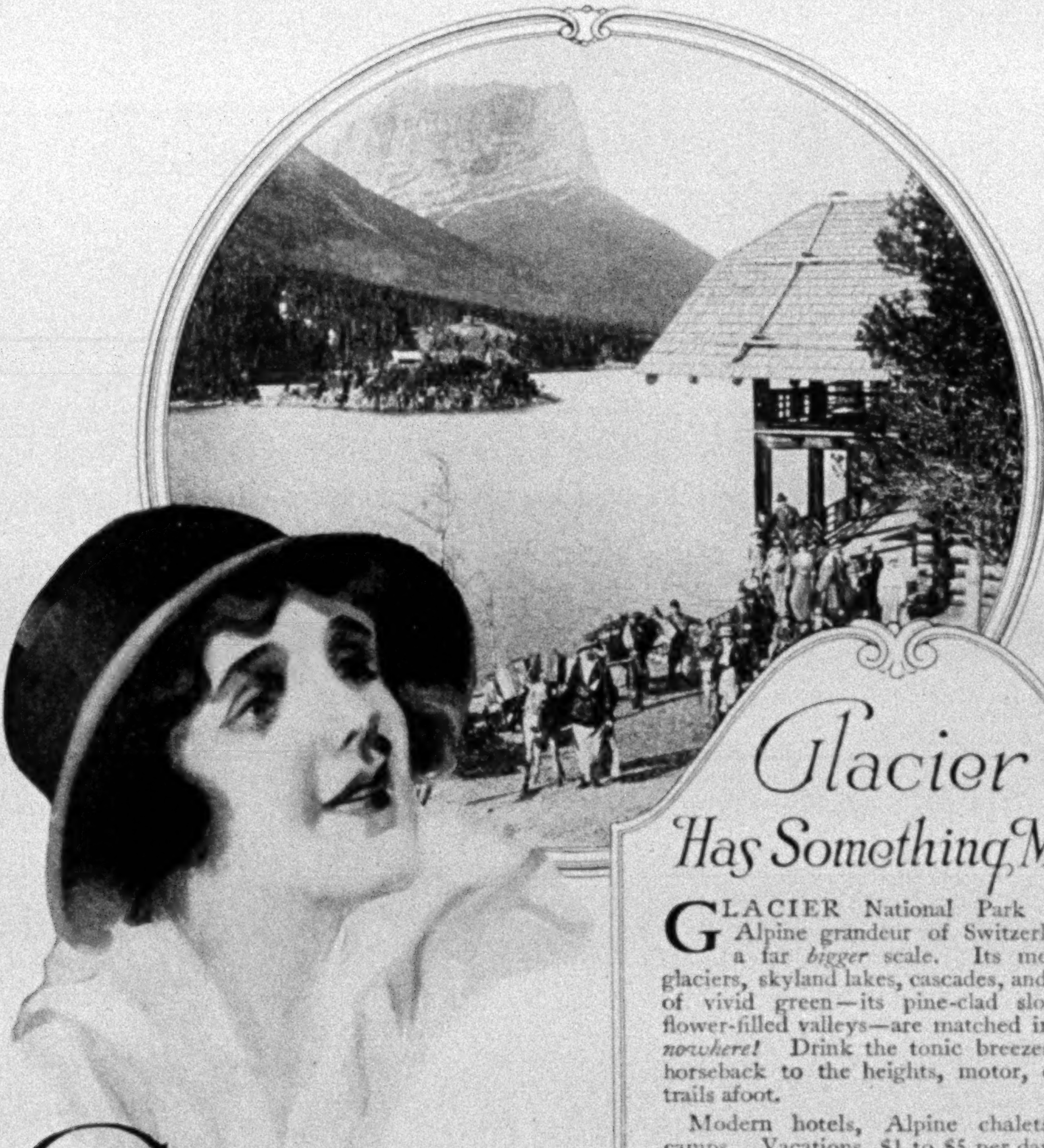
Doctors prefer X-Ray Lighting because of its cheerful, eye-saving character; architects favor its fixture beauty; home-makers like its artistic effect; business men value its economy.

We have published a series of valuable, illustrated books on better lighting for offices and stores, churches, schools, public buildings, homes. Write and say what kind of lighting interests you and we will send you the right book or books.



The Most Powerful Reflector Made

NATIONAL X-RAY REFLECTOR CO.
Chicago: 240 West Jackson Boulevard
New York: 31 West 46th Street



Glacier
Has Something More

GLACIER National Park has the Alpine grandeur of Switzerland—on a far *bigger* scale. Its mountains, glaciers, skyland lakes, cascades, and streams of vivid green—its pine-clad slopes and flower-filled valleys—are matched in beauty *nowhere!* Drink the tonic breezes as you horseback to the heights, motor, or travel trails afoot.

Modern hotels, Alpine chalets, tepee camps. Vacations, $1 to $5 per day.

Stop off at Glacier Park en route to Spokane, the beautiful Lake Chelan region—campers' Paradise—Seattle, Tacoma, and Puget Sound resorts—Portland, Astoria, with the new Columbia River Highway and Clatsop Beach resorts—Vancouver, Victoria, and Alaska. Special low round-trip fares to Glacier Park; to Pacific Northwest and Alaska. Write for Glacier National Park and Lake Chelan literature.

The twin Palaces of the Pacific—S. S. "Great Northern" and S. S. "Northern Pacific"—three times weekly between Portland, Astoria, and San Francisco. Folder on request.

C. E. STONE
Pass. Traffic Mgr., Dept. 40
St. Paul, Minn.
C.W. PITTS, Asst. Gen. Pass Agt.
210 S. Clark St., Chicago
S. LOUNSBERY, Gen. Agt., Pass. Dept., 1184 Broadway, N. Y.

"See America First"
GREAT NORTHERN RAILWAY
Glacier National Park

GLACIER NATIONAL PARK

C.E.Stone, Pass.Traffic Mgr., Gt. Northern Ry., Dept. 40, St. Paul, Minn.
Please send me Aeroplane map folder and descriptive Glacier National Park and Lake Chelan literature free.

Name ....

Address ....

City .... *State* ....

THE UNITED STATES GOVERNMENT
RECOGNIZES THE SAFETY AND SOUNDNESS OF

MUNICIPAL BONDS

With the exception of government bonds, Municipal Bonds are the only securities accepted by the United States Government to secure Postal Savings Deposits.

To thousands of experienced Municipal Bond investors all over the country the house of William R. Compton Company stands first in conservatism, safety and service. We would like to serve you.

We always have on hand several million dollars' worth of Municipals which are constantly changing from day to day. The following are selected from our large list.

Your money invested in these bonds will earn you the interest as specified:

ISSUE	SIZE OF BOND	INTEREST
Troy, New York	$875 & $1,000	3¾%
Hamilton Co., Ohio	$500	3.90%
New Orleans, La.	$100, $500 & $1,000	4.15%
El Paso, Texas	$1,000	4.20%
Mississippi Supervisors Districts	$500 & $1,000	4¾%
Oklahoma Townships	$1,000	5%
Arkansas Drainage Districts	$100, $500 & $1,000	5% to 5⅛%

You can invest $1,000 and larger amounts or $500 and $100, paying you four to five and one-eighth per cent interest—free from Federal Income Tax. Write for our latest Bond List N 4.

William R. Compton Company

Municipal Bonds

"Over a Quarter Century in This Business"

NEW YORK: 14 Wall Street
CHICAGO: 105 S. La Salle Street
ST. LOUIS: 408 Olive Street
CINCINNATI: 102 Union Trust Bldg.

ESTABLISHED 1865

We Have Available Choice

Chicago Investments

Netting 5½% and 6%

These offerings include bonds of $100, $500, and $1,000 denominations, secured in every case by first mortgage upon well-located property of ample earning power to safeguard interest and principal.

Our recommendation is further based on:

- Fifty-one years' experience of this house in successfully handling Chicago investments.
- Conservative appraisements by our own experts.
- Outright purchase of securities which we, in turn, offer to investors.

Write for Circular No. 978-D.

Peabody, Houghteling & Co.

(ESTABLISHED 1865)
10 South La Salle Street, Chicago

Our Service

Its Distinctive Features

No. 2—Opportunities

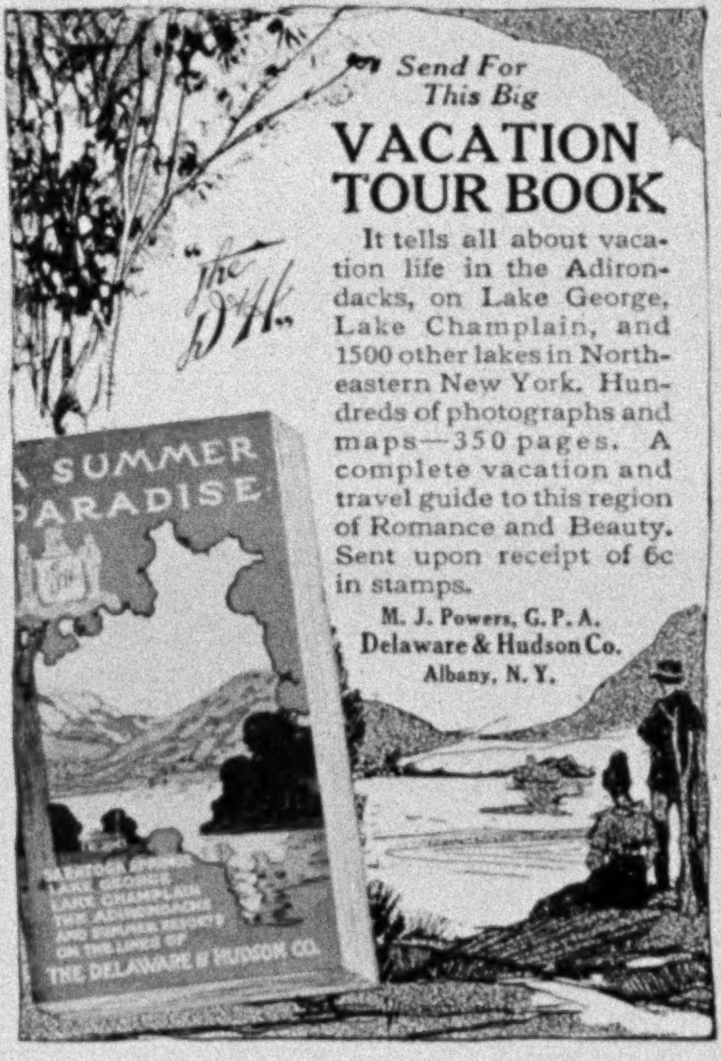
The extent of our resources, our facilities for handling large issues, and the breadth of our distributing organization, facilitate the successful negotiation of many attractive bond issues.

We maintain upon our lists continually a selection of bonds suitable for every institutional and individual investment requirement.

Send for Current List AN-57.

The National City Company

National City Bank Building
New York



Send For This Big

VACATION TOUR BOOK

It tells all about vacation life in the Adirondacks, on Lake George, Lake Champlain, and 1500 other lakes in Northeastern New York. Hundreds of photographs and maps—350 pages. A complete vacation and travel guide to this region of Romance and Beauty. Sent upon receipt of 6c in stamps.

M. J. Powers, G. P. A.
Delaware & Hudson Co.
Albany, N. Y.

$2,000,000

California Hotel Company

First Mortgage 6% Serial Bonds

Secured by

Huntington, Green and Maryland Hotels

Pasadena, Cal.

A closed first mortgage on one of the largest and most valuable hotel properties in the country, valued by independent appraisals at more than double the total amount of the bonds.

Price, Par and Interest

Write for Circular No. D-708

S.W. STRAUS & CO.

Founded 1882 Incorporated 1905
150 Broadway
NEW YORK
Straus Building
CHICAGO
Detroit Cincinnati Minneapolis
Kansas City San Francisco

35 years without loss to any investor.

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The bath is a distinct pleasure, instead of a mere part of the day's routine, when Ivory Soap is used

IVORY Soap lathers so freely and is so mild that handfuls of the bubbling, lively suds can be rubbed into the pores, letting one enjoy not alone the cleansing effect of the pure, white soap and the clear, sparkling water, but the refreshing action of a thorough massage as well.

Afterwards, the smooth Ivory lather can be rinsed out as easily as it is rubbed in. Every particle of the soap is loosened and dissolved immediately, leaving the pores clean in the strictest sense.

The rubdown can be as brisk as one wishes because no part of the skin is made sore or sensitive by the soap. And last but not least, from the time one steps into the tub, the floating cake is right at hand and in sight.

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Vol. XXXI, No. 4 WASHINGTON April, 1917

THE NATIONAL GEOGRAPHIC MAGAZINE

DO YOUR BIT FOR AMERICA

A Proclamation by President Wilson to the American People

My Fellow-Countrymen:

The entrance of our own beloved country into the grim and terrible war for democracy and human rights which has shaken the world creates so many problems of national life and action which call for immediate consideration and settlement that I hope you will permit me to address to you a few words of earnest counsel and appeal with regard to them.

We are rapidly putting our navy upon an effective war footing and are about to create and equip a great army, but these are the simplest parts of the great task to which we have addressed ourselves.

There is not a single selfish element, so far as I can see, in the cause we are fighting for. We are fighting for what we believe and wish to be the rights of mankind and for the future peace and security of the world.

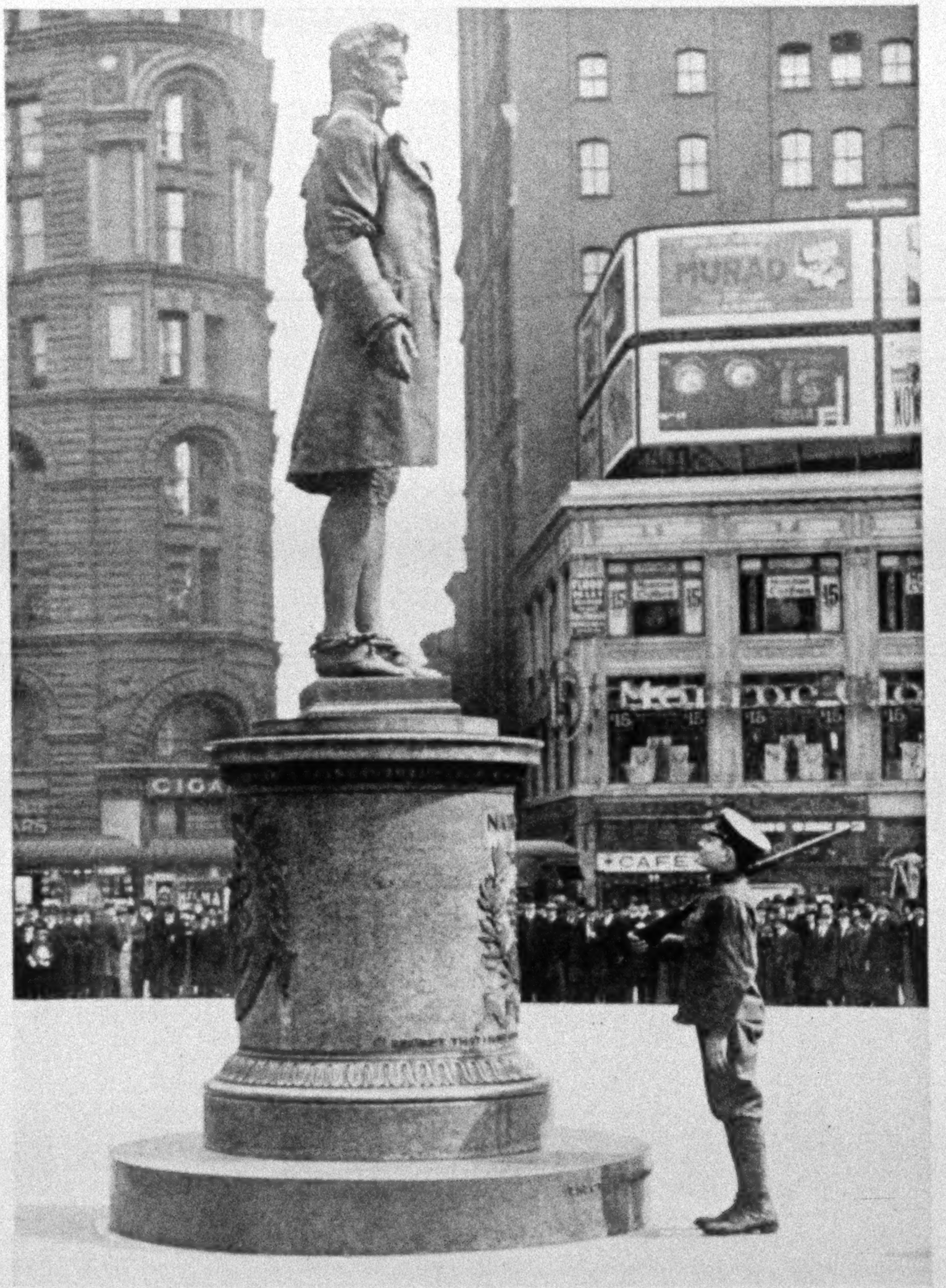
To do this great thing worthily and successfully we must devote ourselves to the service without regard to profit or material advantage and with an energy and intelligence that will rise to the level of the enterprise itself. We must realize to the full how great the task is and how many things, how many kinds and elements of capacity and service and self-sacrifice it involves.

These, then, are the things we must do, and do well, besides fighting—the things without which mere fighting would be fruitless:

We must supply abundant food for ourselves and for our armies and our seamen, not only, but also for a large part of the nations with whom we have now made common cause, in whose support and by whose sides we shall be fighting.

THE THOUSAND NEEDS FOR VICTORY

We must supply ships by the hundreds out of our shipyards to carry to the other side of the sea, submarines or no submarines, what will every day be needed there, and abundant materials out of our fields and our mines and our factories with which not only to clothe and equip our own forces on land and sea, but also to clothe and support our people, for whom the gallant fellows under arms can no longer work; to help clothe and equip the armies with which we are coöperating in Europe, and to keep the looms and manufactories there in raw material; coal to keep the fires going in ships at sea and in the furnaces of hundreds of factories across the sea; steel out of which to make arms and ammunition, both here and there; rails for worn-out railways back of the fighting fronts; locomotives and rolling stock to take the place of those every day going to pieces; mules, horses, cattle, for labor and for military service; everything with which the people of Eng-



Photograph by International Film Service

BEFORE THE STATUE OF NATHAN HALE, CITY HALL SQUARE, NEW YORK

A patriot of 1917 becoming imbued with the patriotism of the Revolutionary hero who, upon being led forth to die, voiced the inspiring regret that he had but one life to lose for his country.

land and France and Italy and Russia have usually supplied themselves, but cannot now afford the men, the materials, or the machinery to make.

It is evident to every thinking man that our industries—on the farms, in the shipyards, in the mines, in the factories—must be made more prolific and more efficient than ever, and that they must be more economically managed and better adapted to the particular requirements of our task than they have been; and what I want to say is that the men and the women who devote their thought and their energy to these things will be serving the country and conducting the fight for peace and freedom just as truly and just as effectively as the men on the battlefield or in the trenches.

SOLDIERS BEHIND THE FIRING LINE

The industrial forces of the country, men and women alike, will be a great national, a great international, service army—a notable and honored host engaged in the service of the nation and the world, the efficient friends and saviors of free men everywhere.

Thousands — nay, hundreds of thousands—of men otherwise liable to military service will of right and of necessity be excused from that service and assigned to the fundamental, sustaining work of the fields and factories and mines, and they will be as much part of the great patriotic forces of the nation as the men under fire.

I take the liberty, therefore, of addressing this word to the farmers of the country and to all who work on the farms: The supreme need of our own nation and of the nations with which we are coöperating is an abundance of supplies, and especially of foodstuffs.

The importance of an adequate food supply, especially for the present year, is superlative. Without abundant food, alike for the armies and the peoples now at war, the whole great enterprise upon which we have embarked will break down and fail.

The world's food reserves are low. Not only during the present emergency, but for some time after peace shall have come, both our own people and a large proportion of the people of Europe must rely upon the harvests in America.

WHERE THE FATE OF THE WAR RESTS

Upon the farmers of this country, therefore, in large measure rests the fate of the war and the fate of the nations. May the nation not count upon them to omit no step that will increase the production of their land or that will bring about the most effectual coöperation in the sale and distribution of their products?

The time is short. It is of the most imperative importance that everything possible be done, and done immediately, to make sure of large harvests.

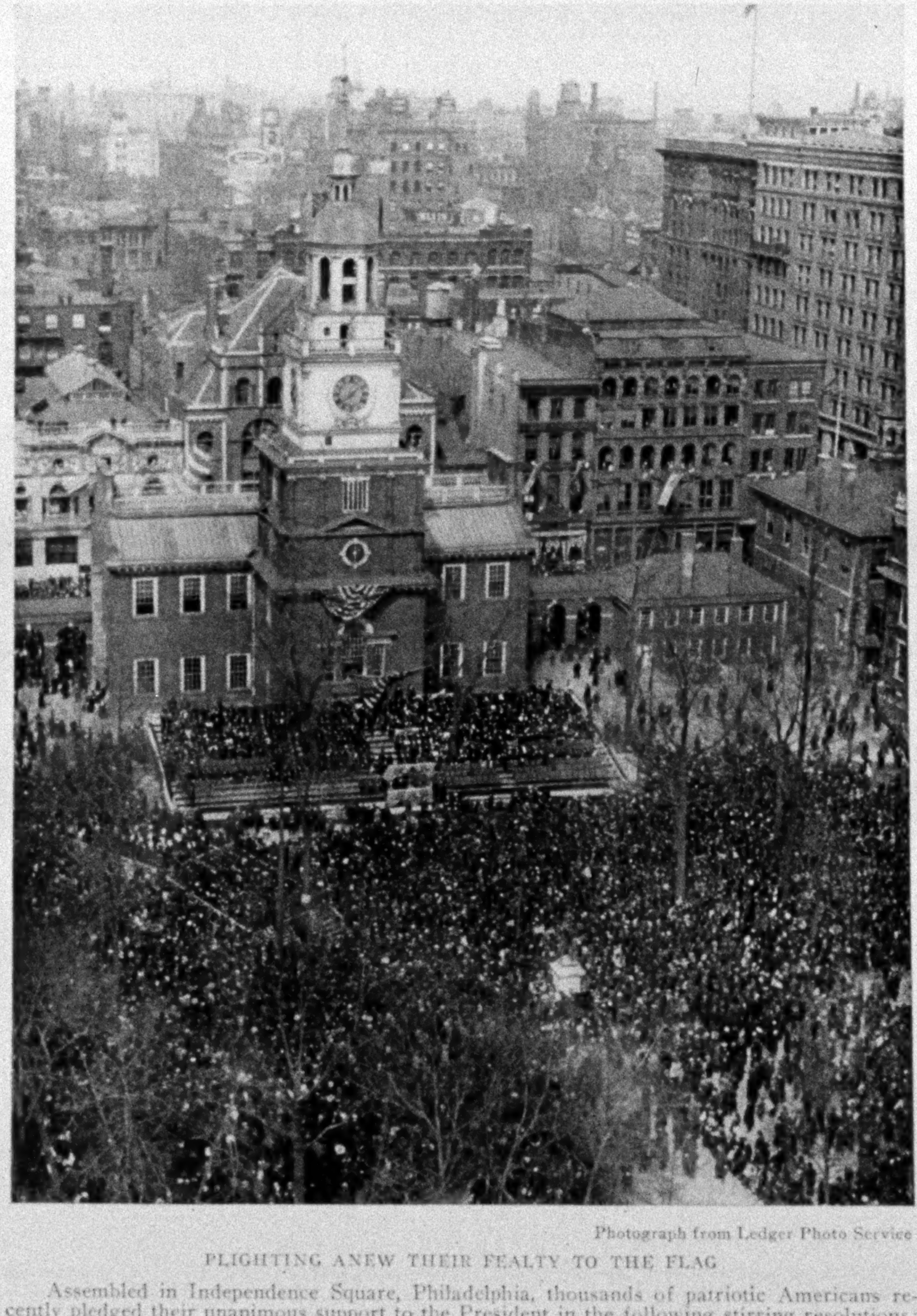
I call upon young men and old alike and upon the able-bodied boys of the land to accept and act upon this duty—to turn in hosts to the farms and make certain that no pains and no labor is lacking in this great matter.

I particularly appeal to the farmers of the South to plant abundant foodstuffs, as well as cotton. They can show their patriotism in no better or more convincing way than by resisting the great temptation of the present price of cotton and helping, helping upon a great scale, to feed the nation and the peoples everywhere who are fighting for their liberties and for our own. The variety of their crops will be the visible measure of their comprehension of their national duty.

The Government of the United States and the governments of the several States stand ready to coöperate. They will do everything possible to assist farmers in securing an adequate supply of seed, an adequate force of laborers when they are most needed, at harvest time, and the means of expediting shipments of fertilizers and farm machinery, as well as of the crops themselves when harvested.

A DEMOCRACY'S CHANCE TO MAKE GOOD

The course of trade shall be as unhampered as it is possible to make it, and there shall be no unwarranted manipulation of the nation's food supply by those who handle it on its way to the consumer. This is our opportunity to demonstrate the efficiency of a great democracy, and we shall not fall short of it!



Photograph from Ledger Photo Service

PLIGHTING ANEW THEIR FEALTY TO THE FLAG

Assembled in Independence Square, Philadelphia, thousands of patriotic Americans recently pledged their unanimous support to the President in the following stirring resolutions:

"Meeting on the eve of a great crisis affecting our national life and on the sacred ground where, 141 years ago, the fathers of the Republic declared belief in the unalienable right of man to life, liberty, and the pursuit of happiness, we citizens of Philadelphia, following the traditions of the fathers, here publicly renew our oath of allegiance to the Constitution and the laws of the Republic, pledging to the President of the United States our loyal support in any action which, in the exercise of his constitutional powers, he may deem necessary to the protection of American rights upon land and sea. Because the common defense is a common duty, universal military training is the only system that is fundamentally democratic and fair. We urge upon Congress the prompt enactment of a bill to put this system into immediate operation."

This let me say to the middlemen of every sort, whether they are handling our foodstuffs or our raw materials of manufacture or the products of our mills and factories: The eyes of the country will be especially upon you. This is your opportunity for signal service, efficient and disinterested. The country expects you, as it expects all others, to forego unusual profits, to organize and expedite shipments of supplies of every kind, but especially of food, with an eye to the service you are rendering and in the spirit of those who enlist in the ranks, for their people, not for themselves. I shall confidently expect you to deserve and win the confidence of people of every sort and station.

To the men who run the railways of the country, whether they be managers or operative employees, let me say that the railways are the arteries of the nation's life, and that upon them rests the immense responsibility of seeing to it that those arteries suffer no obstruction of any kind, no inefficiency or slackened power.

To the merchant let me suggest the motto, "Small profits and quick service," and to the shipbuilder the thought that the life of the war depends upon him. The food and the war supplies must be carried across the seas, no matter how many ships are sent to the bottom. The places of those that go down must be supplied, and supplied at once.

STATESMEN AND ARMIES HELPLESS WITHOUT MINERS

To the miner let me say that he stands where the farmer does—the work of the world waits on him. If he slackens or fails, armies and statesmen are helpless. He also is enlisted in the great service army.

The manufacturer does not need to be told, I hope, that the nation looks to him to speed and perfect every process; and I want only to remind his employees that their service is absolutely indispensable and is counted on by every man who loves the country and its liberties.

Let me suggest, also, that every one who creates or cultivates a garden helps, and helps greatly, to solve the problem of the feeding of the nations; and that every housewife who practices strict economy puts herself in the ranks of those who serve the nation. This is the time for America to correct her unpardonable fault of wastefulness and extravagance.

Let every man and every woman assume the duty of careful, provident use and expenditure as a public duty, as a dictate of patriotism which no one can now expect ever to be excused or forgiven for ignoring.

THE SUPREME TEST HAS COME

In the hope that this statement of the needs of the nation and of the world in this hour of supreme crisis may stimulate those to whom it comes and remind all who need reminder of the solemn duties of a time such as the world has never seen before, I beg that all editors and publishers everywhere will give as prominent publication and as wide circulation as possible to this appeal.

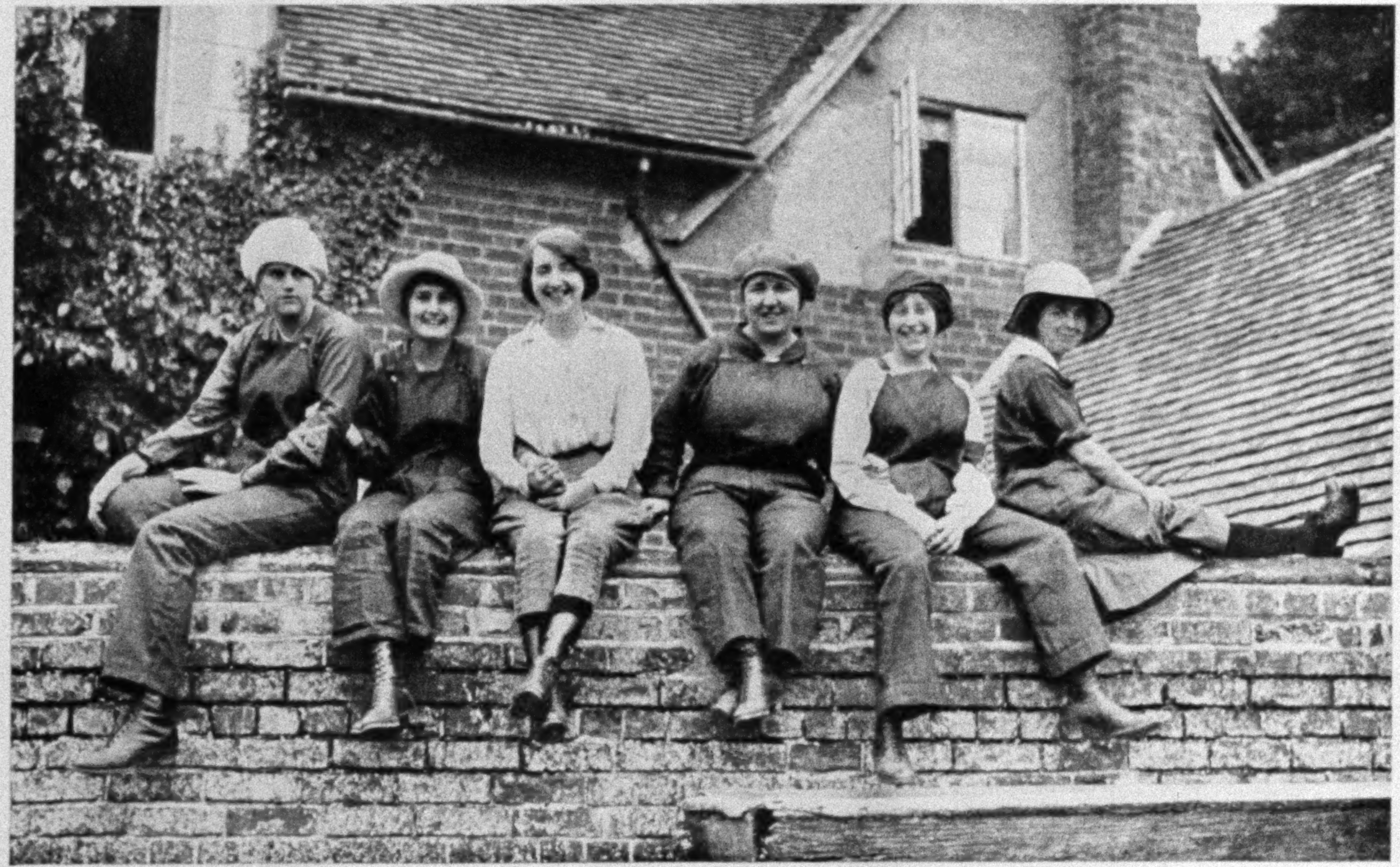
I venture to suggest, also, to all advertising agencies that they would perhaps render a very substantial and timely service to the country if they would give it wide-spread repetition.

And I hope that clergymen will not think the theme of it an unworthy or inappropriate subject of comment and homily from their pulpits.

The supreme test of the nation has come. We must all speak, act, and serve together!

WOODROW WILSON.

THE WHITE HOUSE, *April* 15, 1917.



Photograph by American Press Association

THE WAR BROWNIES RESTING DURING LUNCH TIME: MUNITION WORKERS OF ENGLAND

This sturdy, smiling sextet is a group typical of thousands of human "cogs" in Great Britain's vast machine which is supplying ammunition for the Empire's armies in France, in the Balkans, and in Mesopotamia, and which is also furnishing shells for the Russians and Italians

A TRIBUTE TO AMERICA*

BY HERBERT HENRY ASQUITH

FORMERLY PRIME MINISTER OF GREAT BRITAIN

IT IS only right and fitting that this House, the chief representative body of the British Empire, should at the earliest possible opportunity give definite and emphatic expression to the feelings which throughout the length and breadth of the Empire have grown day by day in volume and fervor since the memorable decision of the President and Congress of the United States.

I doubt whether, even now, the world realizes the full significance of the step America has taken. I do not use language of flattery or exaggeration when I say it is one of the most disinterested acts in history. For more than 100 years it has been the cardinal principle of American policy to keep clear of foreign entanglements. A war such as this must necessarily dislocate international commerce and finance, but on the balance it was doing little appreciable harm to the material fortunes and prosperity of the American people.

What, then, has enabled the President—after waiting with the patience which Pitt described as the first virtue of statesmanship — to carry with him a united nation into the hazards and horrors of the greatest war in history?

Not calculation of material gain, not hope of territorial aggrandizement, not even the pricking of one of those so-called points of honor which in days gone by have driven nations, as they used to drive individuals, to the duelling ground.

It was the constraining force of conscience and humanity, growing in strength and compulsive authority month by month, with the gradual unfolding of the real character of German aims and methods. It was that force alone which brought home to the great democracy overseas the momentous truth that they were standing at the parting of the ways. The American nation had to make one of those great decisions which in the lives of men and nations determine for good or ill their whole future.

What was it that our kinsmen in America realized as the issue in this unexampled conflict? The very things which, if we are worthy of our best traditions, we are bound to vindicate—essential conditions of free and honorable development of the nations of the world, humanity, respect for law, consideration for the weak and unprotected, chivalry toward mankind, observance of good faith—these things, which we used to regard as commonplaces of international decency, one after another have been flouted, menaced, trodden under foot, as though they were effete superstitions of a bygone creed.

America sees in this clear issue something of wider import than the vicissitudes of the battlefields, or even of a rearrangement of the map of Europe on the basis of nationality.

The whole future of civilized government and intercourse, in particular the fortunes and faith of democracy, has been brought into peril. In such a situation aloofness is seen to be not only a blunder, but a crime. To stand aside with stopped ears, with folded arms, with averted gaze, when you have the power to intervene, is to become not a mere spectator, but an accomplice.

There was never in the minds of any of us a fear that the moment the issue became apparent and unmistakable the voice of America would not be heard. She has now dedicated herself without hesitation or reserve, heart and soul and strength, to the greatest of causes, to which, stimulated and fortified by her comradeship, we here renew our fealty and devotion.

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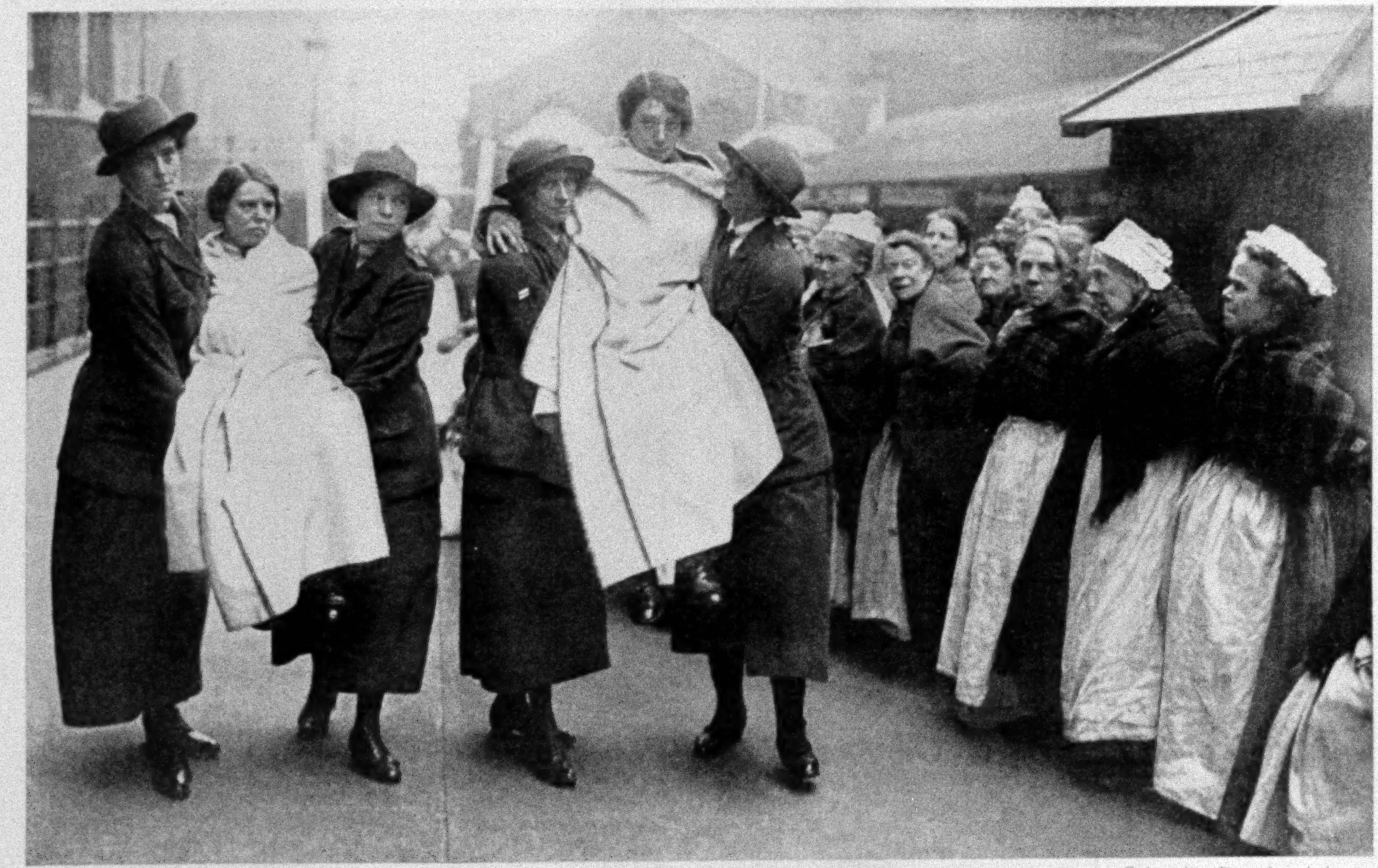
*An address in the House of Parliament April 17, 1917



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DOING A MAN'S JOB: WOMEN AS WAR-TIME FIRE-FIGHTERS

Some of the aged inmates of an English workhouse watching the women "firemen" at fire drill

FRIENDS OF OUR FORESTS

BY HENRY W. HENSHAW

AUTHOR OF "COMMON BIRDS OF TOWN AND COUNTRY," IN THE NATIONAL GEOGRAPHIC MAGAZINE

Illustrations by Louis Agassiz Fuertes

AT EVERY stage of their growth, from the seed to the adult tree, our forest, shade, and orchard trees are subject to the attacks of hordes of insect enemies, which, if unchecked, would soon utterly destroy them.

What the loss of our forest and shade trees would mean to us can better be imagined than described. Wood enters into so many products that it is difficult to think of civilized man without it, while the fruits of our orchards also are of the greatest importance. Aside from the economic loss, which can hardly be imagined, much less estimated, how barren the world would seem shorn of our forests and beautiful shade trees!

Fortunately, the insect foes of trees are not without their own persistent enemies, and among them are many species of birds whose equipment and habits specially fit them to deal with insects and whose entire lives are spent in pursuit of them. Many insects at one or another stage of their existence burrow deeply into the bark or even into the living wood of trees, and so are quite safe from ordinary bird enemies. Woodpeckers, however, being among the most highly specialized of birds, are wonderfully equipped to dig into wood and to expose and destroy these hidden foes.

Certain insects that largely confine their attacks to the smaller branches and terminal twigs are sought out and preyed upon by nuthatches, creepers, titmice, and warblers. Others, and their number is legion, attack the blossoms and foliage, and here the nimble and sharp-eyed warblers render supreme service, the number of plant lice and lepidopterous larvæ they destroy in a single day almost challenging belief.

Thus our woodland songsters are among the most important of all our birds, and in their own field render man unequaled service. Moreover, very few have any injurious habits, and the little harm they do, if any, weighs as nothing in the balance when compared with the good. By reason of their numbers and their activity in hunting insects, our warblers take first place as preservers of the forest, and the following account, which treats of about half the total number, is devoted to the more conspicuous, the more important, and the commoner species.

THE WARBLER FAMILY

Our wood warblers are assembled in a rather loosely defined family (the Mniotiltidæ), embracing in all about 140 species, of which more than a third are visitors to the United States. They are fairly well distributed over the country at large, although more species make their summer homes in the eastern half of the United States than in the western.

A number of notable species, however, summer in the West, as they do also in the Southern States. Our New World warblers are quite unlike their Old World relatives, the Sylviidæ, or true warblers, whose family includes some 75 genera and between 500 and 600 species.

Not only do our American species differ structurally in many particulars from their Old World representatives, especially in possessing nine instead of ten primaries, but they differ markedly also in appearance and habits. It may be said in passing that while our warblers are brilliantly colored and many of them sexually dissimilar, those of the Old World are not only small, but plainly plumaged; moreover, the sexes are generally alike in coloration.

The larger number of our warblers, as well as the most characteristic, are included in the one genus Dendroica, which is notable, since it includes more species than any other genus of North American birds.

HAUNTS OF WOOD WARBLERS

Fortunately for the bird lover, our wood warblers are not recluses. They are creatures of light and sunshine. Some of them, it is true, retire to the mountain fastnesses or the depths of coniferous forests during the nesting period; but the number of these is small and their withdrawal for only a comparatively short time, while the majority at all times of the year favor the edges of the forest, open woods, or brushy clearings.

Their preference for such situations brings many within the bounds of civilization and renders it comparatively easy for any one so inclined to make their acquaintance. As during migration they assemble in flocks, they are, on the whole, pretty well known; and since, as a rule, they are not shy, they have long been favorite objects of observation and study.

WARBLERS AS SONGSTERS

Despite their name, which would seem to imply musical ability of no mean order, our wood warblers, with few exceptions, occupy no very high place in the musical galaxy. All sing, however, after a fashion, and the musical efforts of some are pleasing, even according to human standards. While most warblers are prodigal enough with their music and sing early and often, especially prior to and during the nesting season, their music is frequently so faint as to be audible only to the trained ear of the bird lover.

As if aware of their musical inferiority, few display much enthusiasm in their vocal efforts, but sing while they work, or while pausing for a brief moment as they move among the foliage hunting for food. With them, singing appears to be an audible expression of general content and well being, and, no doubt, an effort to please and attract their mates.

Certain members of the thrush and thrasher families, on the contrary, which contain in their ranks the prima donnas of our bird world, as if conscious of their supremacy, are wont to mount a commanding perch when about to sing, and to pour out their melody for all the world to hear. With them, singing is not merely incidental to the day's work. It is a conscious and supreme effort, and is much too important to be slighted or shared with any other function. Apparently they appreciate to a great extent and enjoy their own outpourings, and, if we may interpret their feelings by human standards, are conscious that their musical offerings entitle them to an audience.

TROPICAL ORIGIN OF WARBLERS

Not only do their bright colors suggest a tropical origin of our warblers, but their whole make-up is in keeping with tropical surroundings. Warblers are thinly feathered and delicately organized and most of them incapable of withstanding any great degree of cold. They are also almost exclusively insect eaters, only a few of the family being at all vegetarian, and these only to a comparatively small extent.

Hence, with them, migration is not a matter of choice, but is imperative. They come to us on a particular errand for a few short months, and when family cares are at an end, back they hie to the tropics, the lands of warmth and sunshine, which lend them to us for a brief season. Thus the true home of our warblers is not where they nest, but where they spend three-fourths of their lives—not the north, but the south—not in the temperate, but in the tropical zones.

THE SPECTACULAR MIGRATION OF WARBLERS

That wonderful phenomenon, bird migration, is illustrated by few birds so clearly and convincingly as by our wood warblers. Assuredly no other birds—unless it be the geese—migrate in such a spectacular manner. The stroller, in late August or September, finds himself in the woods, the silence being broken only by the drumming of a distant partridge, the chirping of insects, or other familiar sounds which only emphasize the general quiet that prevails.

Presto! The scene changes! The woods, apparently almost tenantless but a moment before, are now filled with life of the most animated and intense kind. Every shrub, every tree, has its feathered occupant. Our observer recognizes perhaps a dozen or twenty species, representing several distinct families; but prominent among them, by reason of numbers, variegated plumage, graceful forms, and active motions, are the wood warblers.

Every individual is alert and busy, gliding from one twig to another near by, or flying from one tree to the next, while from all sides come the soft calls and notes of individual members of the flock, whose friendly converse has the effect, if not the purpose, of keeping the individuals of the assemblage in touch with each other and with the flock as a unit. In a few moments silence again reigns where all was commotion and activity. The birds have passed on their seemingly aimless course.

If the observer would learn the solution of the mystery of the birds' evident hurry, he has only to follow them for a time, when he will find that, however erratic may seem the course of individual members of the flock, the flock as a whole is steering a tolerably straight course southward. In other words, he is in the midst of a flock of birds en route to their winter quarters and, in order to economize time, feeding as they go. This, however, is not the only way warblers migrate, nor is it the most important, since the greater part of the long journey of many is performed by night.

Any one with good ears has only to listen on a clear, frosty night in fall to hear hundreds of warblers and other birds as they flit by, a few hundred yards above the earth, the call notes coming incessantly out of the darkness. The route of these flying hosts often carries them above cities, and one cannot be insensible to the incongruity between his surroundings and the woodland scenes, so vividly brought to mind by the lisping notes coming from the darkness overhead. The subject of migration has not inspired our poets so often as might be expected, but Longfellow, in his "Birds of Passage," gives us the following wonderfully suggestive lines:

> But the night is fair,
> And everywhere
> A warm, soft vapor fills the air,
> And distant sounds seem near;
> And above, in the light
> Of the star-lit night,
> Swift birds of passage wing their flight,
> Through the dewy atmosphere.
>
> I hear the beat
> Of their pinions fleet,
> As from the land of snow and sleet
> They seek a southern lea.
> I hear the cry
> Of their voices high,
> Falling dreamily through the sky,
> But their forms I cannot see.

Probably because insects constitute such an important part of their food, warblers, as a rule, migrate early in fall and late in spring. It is true that in fall many linger till frosts nip the vegetation; but insects are abroad even later than this, and it is only necessary to watch these late migrants for a short time to learn that their search for insects is being well rewarded.

Only a few species come north early in spring, the great bulk of the warblers evidently having been taught by bitter experience that in spring, at least, it is not the early bird that finds most worms or finds them easiest.

FLOCKING OF SMALL BIRDS

Just why small birds, when migrating, congregate in large flocks and troop through the woodlands has often been the subject of speculation. Juncos, several species of sparrows, woodpeckers, nuthatches, chickadees, creepers, and, above all, warblers, combine to swell the ranks of these migrating companies. As many as a dozen or more species of warblers may often be seen in one flock, which, in addition, may include 200 or 300 individuals, representing a number of families whose tastes and habits in every-day life differ very widely.

Yet here are these incongruous elements mingling together on terms of the utmost friendliness. Since birds are sociable beings, except during the short time when family cares prompt to jealous vigilance, sociability alone may be the bond of union; added, however, to the kindly feeling of companionship probably is a feeling of increased security which comes from numbers. Certainly no enemy can approach one of these bird assemblages without being spied by at least one pair of vigilant eyes, when the flock is immediately notified by a few sharp chirps—warning for every individual to seek safety in flight or to scurry to cover.

WHAT MYSTERIOUS SENSE GUIDES THEM IN THEIR LONG JOURNEYS?

In what manner warblers migrate—that is, how they are guided on their long journeys—is a moot question. Little mystery attaches to their ability to find their way north or south in daylight, since the recognizable landmarks are many and prominent. As most birds, especially the warblers, choose starlight and moonlight nights for their trips, perhaps they are similarly guided by night, and natural landmarks, as mountains, rivers, and the coastline may point out much, if not all, of their way.

However plausible this explanation may sound in the case of birds migrating over land, it utterly fails when applied to migrants whose journeys north and south necessitate flight over long stretches of ocean, in some instances at least 2,000 miles, quite out of sight of land and of all landmarks.

In seeking an explanation of the mystery of birds' ability to find their way under such circumstances, many are inclined to reject the one-time sufficient answer, "instinct," in favor of the more recent theory, the possession by birds of another faculty, the so-called "sense of direction." This added sense enables birds to return to a known locality with no other aid than an ever-present knowledge of the right direction.

But, in the case of our wood warblers, there is little need of appealing to another sense to guide them in migration, or, indeed, to anything out of the ordinary save excellent memory and good eyesight. The five-hundred-mile flight toward the tropics across the Gulf of Mexico is made by preference, and however it originated as a fly line, had it proved to be extra hazardous, it might have been abandoned at any time in favor of the apparently safer West Indian route.

But, after all, the Gulf trip involves few hazards other than those connected with storms, since the flight across the water, even at a slow rate, would necessitate a journey of less than 24 hours, and this, no doubt, is quite within the capacity of even the smallest and weakest of the family. Moreover, the South American Continent is too big a mark to be easily missed, and an error of a few hundred miles north or south would make little difference in the safety of the birds.

WHY WARBLERS MIGRATE

It may be set down as an axiom that all birds which travel south in fall do so because they must migrate or freeze or starve. Why some of them leave early, when food in their summer home is seemingly so abundant, is indeed a puzzle. Once the nestlings are on the wing and ready for the journey, off they go, old and young.

Nevertheless, by an apparently premature start they only anticipate by a few weeks the time of scarcity when they must go, and perhaps the lesson of bitter experience in the history of the several species has taught them to go when all the conditions are favorable. It is true that every winter a few birds, often a few individuals of a given species, winter far north of the customary winter home. Some of these are evidently stragglers or wanderers which, for some unexplained reason, failed to accompany the rest of their kind on the southward migration. They in no wise affect the general statement, being exceptional in every way.

A few of our warblers in Florida and on other parts of our southern coast do not migrate; but the almost universal rule in the family is to abandon the summer home when the care of the young ceases and to go far southward ere they stop for the winter. Indeed, the males of many species do not trouble themselves much with the care of the nestlings, but prepare to migrate before the young are well on the wing.

A still more flagrant case is that of the hummingbirds. The male deserts the female when she is still on her eggs, shifting the responsibility of caring for the family entirely on her devoted head, while he disports himself among the flowers, leaving for the south long before his exemplary mate and the young are ready.

Some of our species, however, while migrating southward, are satisfied to remain all winter within our boundaries. Thus the pine and palm warblers winter in the Gulf States, while a greater or less number of individuals, representing several species, winter in southern Florida. The great majority, however, winter south of the United States, in Central and South America.

Thus Professor Cooke tells us: "The prairie, black-throated blue, Swainson's, Bachman's, Cape May, and Kirtland's warblers go only to the West Indies. The worm-eating, myrtle, magnolia, chestnut-sided, black-throated green, hooded, blue-winged, Nashville, orange-crowned, parula, palm, and Wilson's warblers, and the chat, go no farther than Central America, while many species spend the winter in South America, including some or all the individuals of the black and white, prothonotary, golden-winged, Tennessee, yellow, cerulean, bay-breasted, black-poll, Blackburnian, Kentucky, Connecticut, mourning, and Canada warblers, the redstart, oven-bird, and both the water-thrushes. Nearly all the warblers of the western United States spend the winter in Mexico and the contiguous portions of Central America."

VAST NUMBERS SUCCUMB

The northward journey in spring, away from the land of sunshine and plenty to the land of uncertain spring weather, is another matter. Probably if all birds that habitually abandon the north and winter in the south were to nest there, their quota, added to the number resident in the tropics, would be too great for the means of subsistence.

Nevertheless, birds are not forced away from their winter quarters by inclement weather or impending famine, but by the subtle physiological change which warns them of the approach of the mating season and fills them with new desires, among which is the compelling one of a return to the spot where they first saw the light, or where they reared last season's brood.

Whatever the cause, the birds are not discouraged by the many and great perils that attend migration, and vast numbers every year succumb to them. Storms, especially off-shore storms, constitute the gravest peril, and there is abundant evidence that millions of birds are annually blown out to sea to find watery graves. Perhaps no family suffers more in the aggregate than the warblers. Thinly feathered, delicately organized, highly insectivorous, they are exposed to unusual dangers while birds of passage to and from their nesting grounds.

It is a matter of common observation that every few years in some given locality, perhaps embracing a region of considerable size, a particular species of warbler or other bird suddenly becomes rare where before common. After a season or so, though sometimes not for years, the equilibrium is reëstablished and the numbers are as before. These changes very probably are the visible signs of migration catastrophes, the result of the sweeping away of a migration wave, composed of one or of many species, in the path of some sudden storm.

Again, many of us have witnessed the dire effects of a prolonged rain and sleet storm in spring, when thousands of luckless migrants find only too late that they have prematurely left the warmth and plenty of their tropical winter refuges. Under such circumstances thousands of migrants perish from the combined effects of cold and starvation, and among them are sure to be great numbers of warblers.

ECONOMIC VALUE OF WARBLERS

From the esthetic point of view, our warblers, as a group, occupy a high and unique position. They also occupy no uncertain place in the list of our useful birds. Preëminently insectivorous, they spend their lives in the active pursuit of insects. They begin with the eggs, preying upon them whenever and wherever found, and continue the good work when the egg becomes the larva and when the larva becomes the perfect insect.

They are especially valuable in this respect because of the protection they lend to forest trees, the trunk, bark, and foliage of which they search with tireless energy. Their efficiency is vastly increased because the many different species pursue the quest for food in very different ways. While some confine their search chiefly to the trunks and large branches and examine each crack and crevice in the bark for eggs or larvæ, others devote their energies to the twigs and foliage, scanning each leaf and stem with eager eyes. Still others descend to the ground and examine the rubbish and grass for hidden prey, while nearly all are adept at catching insects on the wing.

Each species, however, has a method of its own, more or less unlike that of its fellows, and each excels in some specialty. Not only does the group as a whole specialize on insects, but each individual member of the group still further specializes, so as to leave no loophole for the escape of the enemy.

The quantity of animal food required to drive the avian engine at full speed is so very great that it is no exaggeration to say that practically all the waking hours of our warblers, from daylight to dark, are devoted to food-getting. What this never-ceasing industry means when translated into tons-weight of insects, it is impossible even to guess, but the practical result of the work of our warblers and other insectivorous birds is that we still have our forests, and shall continue to have them so long as we encourage and protect the birds.

In the case of orchards and shade trees, there are other means at our disposal of controlling the insect enemy, notably the use of sprays. Sprays are very important, since birds are too few in number immediately to control insect outbreaks, especially nowadays, when the number of destructive native insects has been so greatly increased by importations from all quarters of the globe. But for the preservation of our forests we must rely largely upon our birds, since the use of sprays or of other agencies over our vast woodland tracts would be too expensive, even were it not quite impracticable for many other reasons.

MEANS OF INCREASING THE NUMBER OF WARBLERS

Insects are very numerous, and there is reason to believe that much benefit would result if we could multiply the present number of their enemies—the birds. The erection of bird boxes and shelters is an easy way to increase the number of certain species of birds, like swallows and chickadees. Unfortunately, with few exceptions, our warblers do not build their nests in cavities, and hence can not be induced to occupy bird boxes.

Many of them, however, nest in bushes, vines, and shrubbery, and by planting clumps of these near houses something can be done toward increasing the numbers of certain species, as the yellow warbler and the redstart. Because our warblers are chiefly insectivorous, their food habits bar them from the usual bird lunch-counter in times of hard storms.

During migration, warblers are peculiarly exposed to the danger of prowling cats. Many species feed close to or even on the ground, and then they are so much concerned with their own business that any tabby, however old and lazy, is equal to catching one or more individuals daily. The bird lover can do good service by summarily disposing of vagrant cats, which, during migration, work havoc in the ranks of our small birds.

They can also restrain the pernicious activities of their own pets, for these, however well fed, are still subject to the predatory instincts of their wild ancestry, which impel them to stalk a live bird with all the zeal and cunning of their forebears.

PLUMAGES OF WARBLERS

Little difficulty is experienced, even by the tyro, in distinguishing warblers from other birds, but to recognize the several species is not so easy, particularly as the adult males and females of many species are markedly dissimilar, while the young, both in the first and second plumages, often differ from the adults. So far as possible the various plumages are shown in the illustrations of the artist, which are so admirable as to do away with the need of descriptive text. All are approximately one-half life size.

THE WARBLERS OF NORTH AMERICA

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YOUNG FISH-HAWKS ABOUT TO LEAVE THEIR NEST: GARDINER'S ISLAND, NEW YORK

Photograph by Frank M. Chapman, and from his book, "Camps and Cruises of an Ornithologist"

MARYLAND YELLOW-THROAT (Geothlypis trichas and variety)

Length, about 5¼ inches. Mostly green above, yellow below. Distinguished from other warblers by broad black band across forehead, bordered narrowly with white.

Range: Breeds from southern Canada to southern California, Texas, and Florida; winters from the southern United States to Costa Rica.

This little warbler is common throughout the Eastern and Southern States, frequenting thickets and low bushes on swampy ground. He is not a tree lover, but spends most of his time on or very near the ground, where he hunts assiduously for caterpillars, beetles, and various other small insects. Among the pests that he devours are the western cucumber beetle and the black olive scale. He has a cheery song of which he is not a bit ashamed, and when one happens to be near the particular thicket a pair of yellow-throats have chosen for their own, one has not long to wait for vocal proof that the male, at least, is at home. The yellow-throat has the bump of curiosity well developed, and if you desire a close acquaintance with a pair you have only to "squeak" a few times, when you will have the pleasure of seeing at least one of the couple venture out from the retreat far enough to make sure of the character of the visitor.

YELLOW-BREASTED CHAT (Icteria virens and subspecies)

Length, about 7½ inches. Its size, olive-green upper parts, and bright yellow throat, breast, and upper belly distinguish this bird at a glance.

Range: Breeds from British Columbia, Montana, Wisconsin, Ontario, and southern New England south to the Gulf States and Mexico; winters from Mexico to Costa Rica.

The chat is one of our largest and most notable warblers. It is a frequenter of brushy thickets and swampy new growth, and, while not averse to showing itself, relies more upon its voice to announce its presence than upon its green and yellow plumage. Not infrequently the chat sings during the night. The song, for song we must call it, is an odd jumble of chucks and whistles, which is likely to bring to mind the quip current in the West, "Don't shoot the musician; he is doing his best." In this same charitable spirit we must accept the song of the chat at the bird's own valuation, which, we may be sure, is not low. Its nest is a rather bulky structure of grasses, leaves, and strips of bark, and is often so conspicuously placed in a low bush as to cause one to wonder how it ever escapes the notice of marauders fond of birds' eggs and nestlings.

The chat does no harm to agricultural interests, but, on the contrary, like most of the warbler family, lives largely on insects, and among them are many weevils, including the alfalfa weevil and the boll weevil so destructive to cotton.

(See Biol. Surv. Bull. 17, p. 18 *et seq.;* also Circular 64, p. 5.)

OVEN-BIRD (Seiurus aurocapillus)

Length, a little over 6 inches. Above mostly olive green; below white, breast and sides streaked with black.

Range: Breeds from southern Mackenzie, Ontario, southern Labrador, and Newfoundland south to Wyoming, Kansas, southern Missouri, Ohio Valley, and Virginia; also in mountains of Georgia and South Carolina; winters in southern Florida, southern Louisiana, Bahamas, West Indies, and southern Mexico to Colombia.

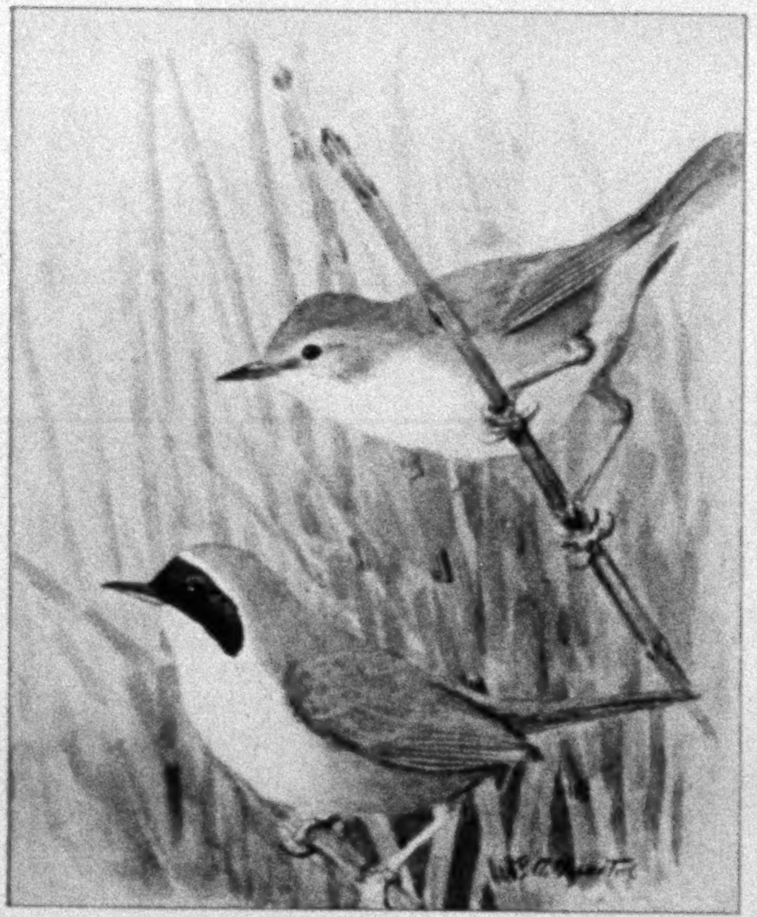
The oven-bird is one of our best-known birds and one the woodland stroller is sure to get acquainted with, whether he will or no, so common is it and so generally distributed. In moments of ecstacy it has a flight song which has been highly extolled, but this is only for the initiated; its insistent repetition of "teacher, teacher, teacher," as Burroughs happily phrases it, is all the bird vouchsafes for the ears of ordinary mortals. Its curious domed-over grass nest is placed on the ground and is not hard to find. The food of the oven-bird does not differ greatly from that of other warblers, notwithstanding the fact that the bird is strictly terrestrial in habits. It consists almost exclusively of insects, including ants, beetles, moths, span worms, and other caterpillars, with a few spiders, millepods, and weevils.

(See Biol. Surv. Bull. 17; also yearbook for 1900, p. 416.)

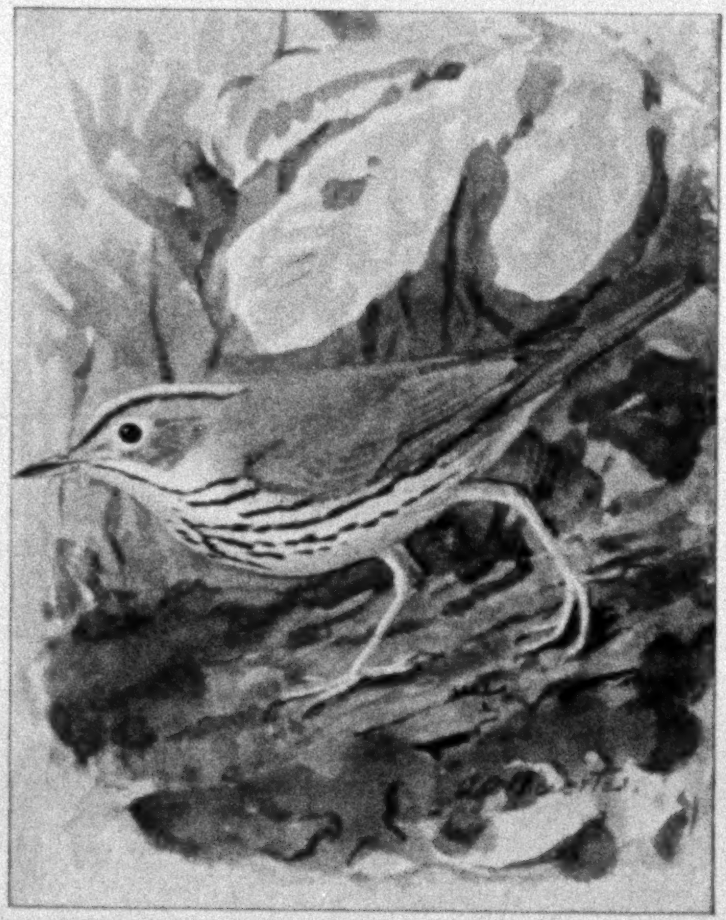
RED-FACED WARBLER (Cardellina rubrifrons)

Range: Mainly in Transition Zone in mountains of southern Arizona and southwestern New Mexico and south through Mexico to the highlands of Guatemala.

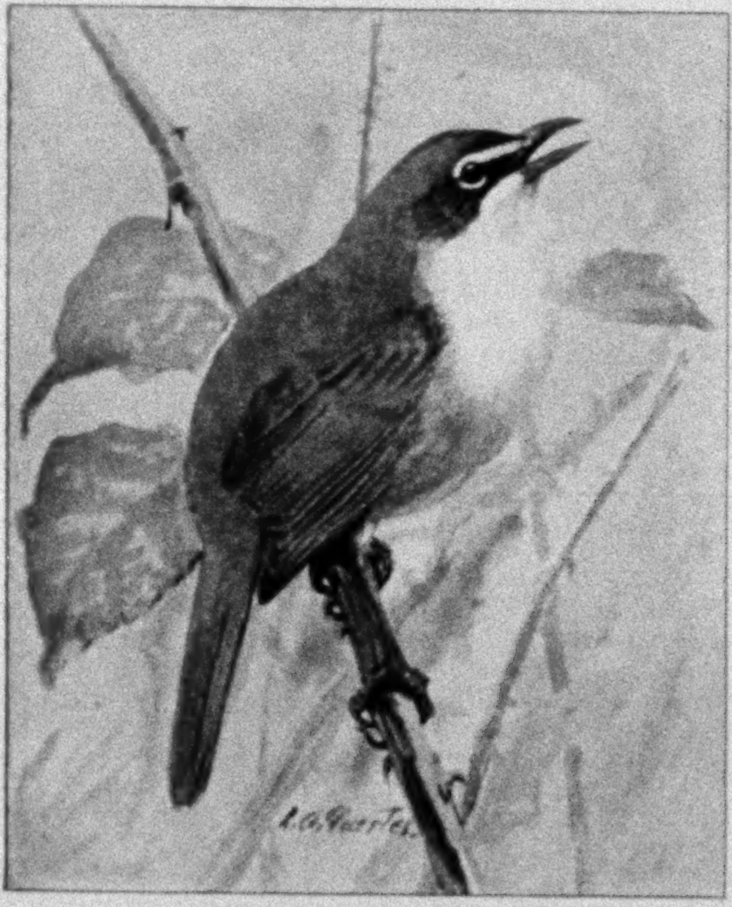
So differently colored from our own North American warblers generally is the little red-face that one might at once suspect it to be a stranger from a strange land. So at least it seemed to me when, in the mountains near Apache, Arizona, in July, 1874, I saw the first one ever detected within our borders. Later in the same year I found others on Mount Graham. It is a Mexican species which has obtained a foothold along our southern borders in Arizona and New Mexico. As I noted at the time, I saw flocks of ten or fifteen among the pines and spruces, the birds frequenting these trees almost exclusively, only rarely being seen on the bushes that fringed the stream. In habits red-faced warblers are a rather strange compound, now resembling the common warblers, again recalling the redstart, but more often, perhaps, bringing to mind the less graceful motions of the familiar titmice. Their favorite hunting places appear to be the extremities of the limbs of spruces, over the branches of which they quickly pass, with a peculiar and constant sidewise jerk of the tail. Since 1874 other observers have had a better chance to study the bird and a number of nests have been taken. These were under tufts of grass, and in the case of one found by Price was "such a poor attempt at nest-building and made of such loose material that it crumbled to fragments on being removed."



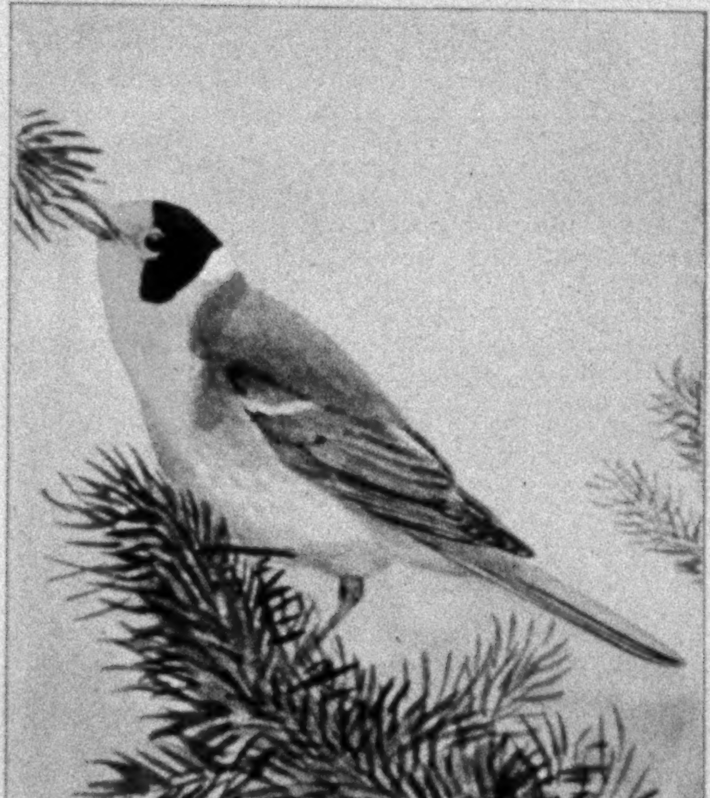
MARYLAND YELLOW-THROAT
Female and Male



OVEN-BIRD



YELLOW-BREASTED CHAT



RED-FACED WARBLER

WORM-EATING WARBLER
(Helmitheros vermivorus)

Range: Breeds mainly in the Carolinian Zone from southern Iowa, northern Illinois, eastern and western Pennsylvania, and the Hudson and Connecticut River valleys south to southern Missouri, Tennessee, Virginia, and mountains of South Carolina; winters from Chiapas to Panama, in Cuba and the Bahamas.

He who would make the acquaintance of the worm-eating warbler must seek it in its own chosen home, far from which it never strays. It is a bird of shaded hillside and dark thickets along watercourses. Though nimble in its movements and an active insect hunter, it is an unobtrusive little warbler, garbed in very modest colors, and is likely wholly to escape the notice of the unobservant.

There seems to be an unusual degree of jealousy among the males, and a pair, the hunting and the hunted, are often seen pursuing a rapid, zigzag flight through trees and bushes. I imagine that in such cases the pursuing male, whose angry notes show how much in earnest he is, is asserting the right of domain over his own hunting grounds, and driving from his preserves an intruder.

Like several of our terrestrial warblers, the worm-eater has caught the trick of walking, perhaps borrowing it from his thrush neighbors, and he rarely or never hops. In his case the term "terrestrial" must be modified by the statement that to a certain extent he is a connecting link between the arboreal members of the family, as the black-throated green and Tennessee, which descend to the ground only casually, and such species as the Connecticut and the Swainson, which seek their food chiefly on the ground. Of the musical ability of the worm-eating warbler little is to be said save that his song is so very feeble that one must listen carefully to hear it at all, and that it much resembles that of our familiar "chippy" when heard a long distance off. This warbler nests on the ground, often on a hillside or in a shallow depression, and the pairs seem so much attached to their old home that they may confidently be looked for in the same place year after year.

GOLDEN-WINGED WARBLER
(Vermivora chrysoptera)

Range: Breeds in Alleghanian Zone from central Minnesota, southern Ontario, and Massachusetts south to southern Iowa, northern Illinois, northern Indiana, northern New Jersey, and northern Georgia; winters from Guatemala to Colombia.

Though less gaudily colored than certain others of our warblers, the golden-wing ranks high in the family for beauty, and its trim form and tastefully contrasted tints of gray, black, and yellow may well excite admiration. It is almost wholly limited to eastern States, rarely indeed being found west of the Mississippi, and its summer haunts are in the northern parts of its range. Though common in some localities, the golden-wing in most places is sufficiently rare always to interest the bird observer, and in Massachusetts if several are heard or seen in a long tramp the day may well be esteemed a red-letter day. The bird is to be looked for in deciduous timber, and is especially fond of elms and birches as hunting grounds. I have often seen it busy in elms so high up that only with difficulty could it be distinguished from the Tennessee, Nashville, and other strikingly different warblers in company with it. Like the blue-wing, it has the habit of clinging to the tip of a branch or cluster of flowers, back downward, examining the spot with the most exact scrutiny.

Once heard, its song is not to be forgotten nor mistaken for that of any other warbler, unless possibly the blue-wing. It possesses a buzzing, insectlike quality and is well represented to my ears by the syllables *ze-ze-ze-ze*, the latter notes in a higher pitch. It seems strange that a bird so distinctly arboreal in habits should choose to nest on the ground; but numerous nests of the golden-wing have been found, all of them practically on or a few inches from the earth, though usually supported by weed stalks or grass stems.

ORANGE-CROWNED WARBLER
(Vermivora celata celata)

Range: Breeds in lower Hudsonian and Canadian Zones from Kobuk River, Alaska, southeast to central Keewatin and Manitoba, and south locally in the Rocky Mountains to New Mexico; winters in the Gulf and South Atlantic States to South Carolina and south through Mexico to Mount Orizaba.

The orange-crowned warbler is much better known as a migrant, especially a fall migrant, than as a summer resident. Its summer home, in fact, is so far north that it is beyond the ken of most observers, although the bird occasionally summers, and no doubt nests, in Maine and Wisconsin. Seton found it a common summer resident in Manitoba; Kennicott discovered it nesting about the Great Slave Lake among clumps of low bushes; while Nelson found it common in summer in the wooded regions of northern Alaska. For some reason or other of late years the orange-crown seems to be a much commoner migrant in Massachusetts, and perhaps generally in New England, than formerly, and the sight of three or four in a day occasions no great surprise. It winters in Florida and in other of the South Atlantic States, and the cause of its rarity in the Eastern States in spring is due to the fact that it migrates up the Mississippi Valley. The orange-crown is one of the most plainly colored of the warbler tribe, and there is little about it to attract the notice of the casual observer. The song is said to consist of a few sweet trills, and, as is the case with the ditties of so many of its kind, has been likened to that of the familiar little "chippy."

BLUE-WINGED WARBLER (Vermivora pinus)

(For text, see page 311)

BLACK AND WHITE WARBLER
(Mniotilta varia)

Length, about 4¼ inches. Easily known by its streaked black and white plumage.

Range: Eastern North America. Breeds from central Mackenzie, southern Keewatin, northern Ontario, Newfoundland, Nova Scotia, and New Brunswick to eastern Texas, Louisiana, central Alabama, and northern Georgia, west to South Dakota; winters in Florida and from Colima and Nuevo Leon to Colombia, Ecuador, and Venezuela.

A warbler in form and general make-up, a creeper by profession and practice, this readily identified species, in its striped suit of black and white, may be observed in any bit of eastern woodland. Here it flits from tree to tree or climbs over the trunks and branches, scanning every crack and cranny for the insects that constitute its chief food. Though not a lover of open country, it frequently visits the orchard, where it performs its part in the task of keeping insect life within due bounds. It nests on the ground and hides its domicile so skillfully that it is not often found. None of the warblers are noted as songsters, but the black and white creeper, as I like best to call it, emits a series of thin wiry notes which we may call a song by courtesy only. In scrambling over the trunks of trees it finds and devours many long-horned beetles, the parents of the destructive root-borers; it also finds weevils, ants, and spiders.

YELLOW WARBLER (Dendroica æstiva and races)

Length, little more than 5 inches. Mostly yellow, breast and belly streaked with reddish brown.

Range: North America, breeding generally throughout its range south to California, New Mexico, Missouri, and northern South Carolina; winters in Central and South America.

The "yellow bird," or wild canary, as it is sometimes called, is one of the commonest of the warbler tribe and ranges over a vast extent of territory, being found here and there from ocean to ocean. Unlike some of its relatives, it prefers open thickets, especially of willows, to thick woodland, and often builds its pretty nest by the roadside or in garden shrubbery. Though not an expert musician, the yellow warbler sings early and often, and in zeal makes up what it lacks in quality of voice. Because its nest is easily found by the initiated, this warbler is often victimized by the infamous cowbird, and is forced to bring up one, or even two, young cowbirds in place of its own rightful progeny. It is pleasant to be able to record the fact that sometimes the clever warbler knows enough—how it knows it is another matter—to evade the unwelcome responsibilities thus thrust upon it, and builds a platform over the alien egg, and then continues its domestic affairs as originally planned. Indeed, cases are on record when two cowbirds' eggs have been found in a nest, each covered up by a separate layer of nest material.

(See Biol. Surv. Bull. 17, p. 20 *et seq.*; also Bull. 29.)

AUDUBON'S WARBLER (Dendroica auduboni)

Length, about 5 inches. Much like the yellow-rump, but with yellow crown and throat patch.

Range: Breeds from central British Columbia, Alberta, and southwestern Saskatchewan to our southern border, east to South Dakota and Nebraska; winters from California and Texas south to Guatemala.

No member of the wood warbler family is more characteristic of the group than this beautiful bird. In voice, coloration, and habits it is almost the counterpart of the yellow-rump of the Eastern States, for which indeed it might easily be mistaken were it not for its yellow throat, the corresponding area in the yellow-rump being white. It summers in the mountains and shows off to advantage against the dark foliage of the pines. It seems to have little fear of man and in winter frequents orchards, gardens, and dooryards. Wherever it may be, it keeps up an incessant hunt for its insect food, in the pursuit of which, like many others of its family, it sometimes essays the rôle of flycatcher, being very expert and nimble on the wing. This warbler also devours large numbers of ants, flies, scale and plant lice, and noxious bugs.

(See Biol. Surv. Bull. 30, pp. 43-46.)

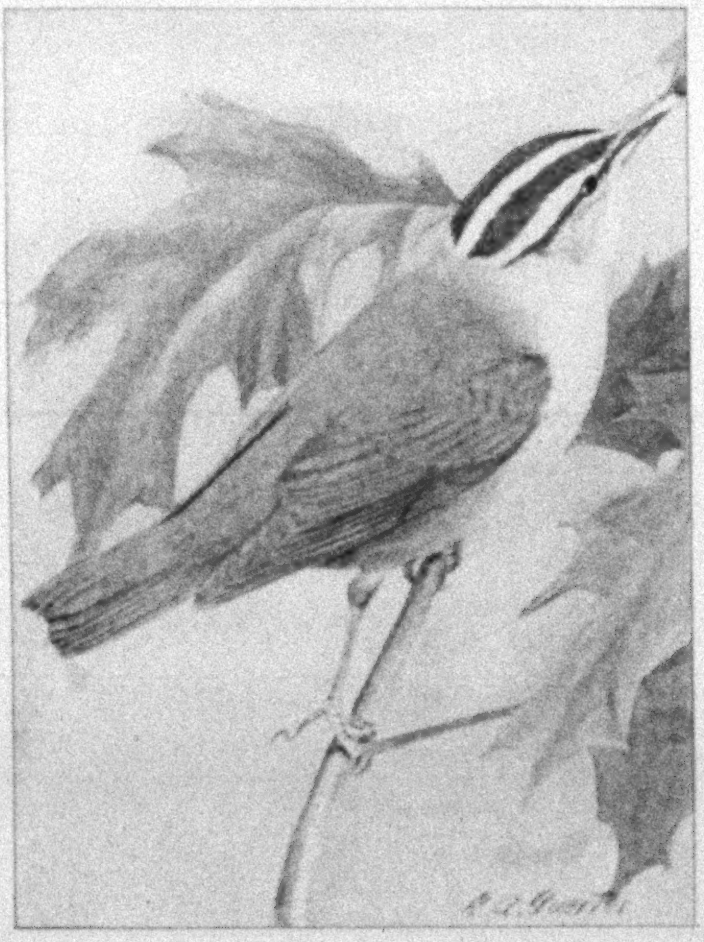
REDSTART (Setophaga ruticilla)

Length, nearly 5½ inches. To be distinguished from other warblers by its coloration and its motions. (See below.)

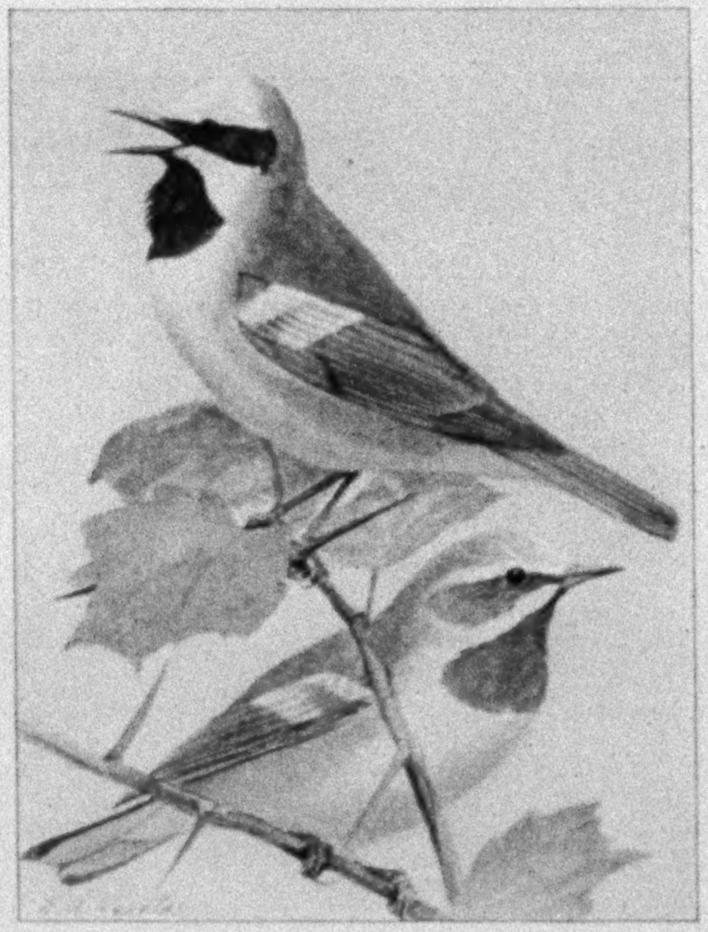
Range: Breeds from central British Columbia and eastern Canada to Washington, Utah, Colorado, Oklahoma, and North Carolina; winters in the West Indies and from Mexico to Ecuador.

Its beauty of form and plumage and its graceful motions place this dainty bird at the head of our list of wood warblers—a place of distinction indeed. The bird appears to be the incarnation of animated motion and fairly dances its way through the forest. Spanish imagination has coined a suggestive and fitting name for the redstart, *candelita*, the little "torch-bearer." The full appropriateness of the name appears as the graceful creature flits through the greenery, displaying the salmon-colored body and the bright wing and tail patches. The redstart is not unknown in some parts of the West, but it is essentially a bird of the Eastern States, where it is a common inhabitant of open woodland districts. While it builds a rather neat and compact structure of strips of bark, plant fibers, and the like, placing it in a sapling not far from the ground, the nest is not the thing of beauty one might be led to expect from such a fairy-like creature. Ornamental as the redstart is, it possesses other claims on our gratitude, for it is a most active and untiring hunter of insects, such as spittle insects, tree-hoppers, and leaf-hoppers, and both orchard and forest trees are benefited by the unceasing warfare it wages.

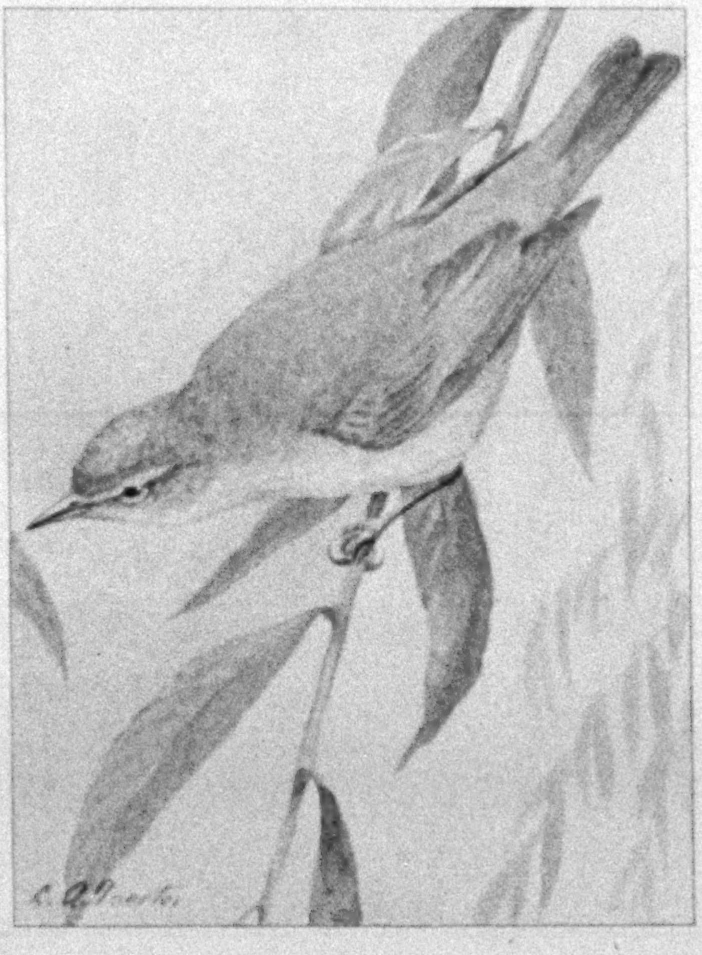
(See Biol. Surv. Bull. 17, p. 20 *et seq.*)



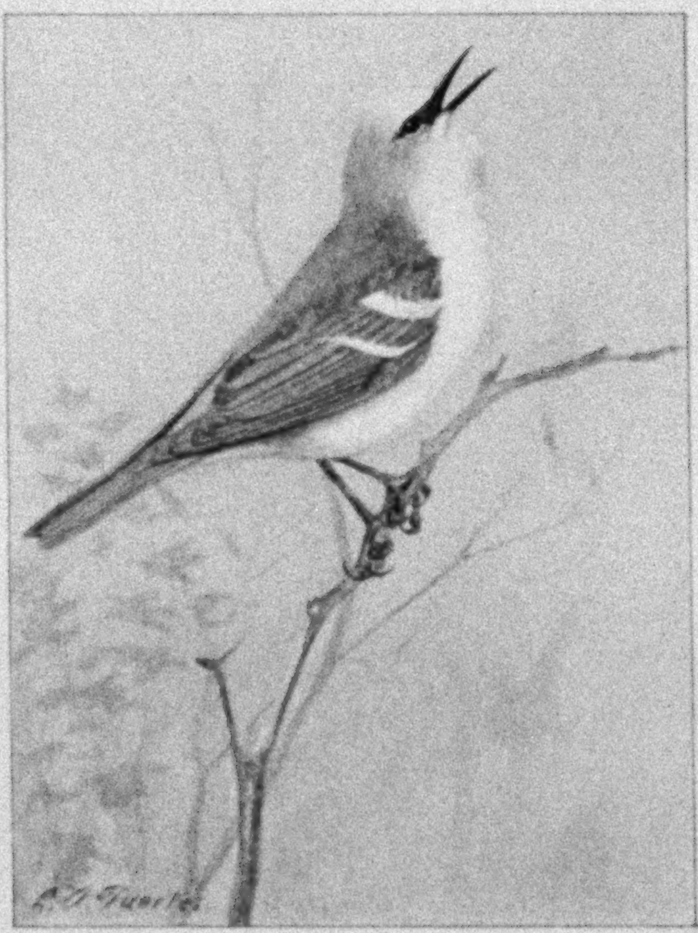
WORM-EATING WARBLER



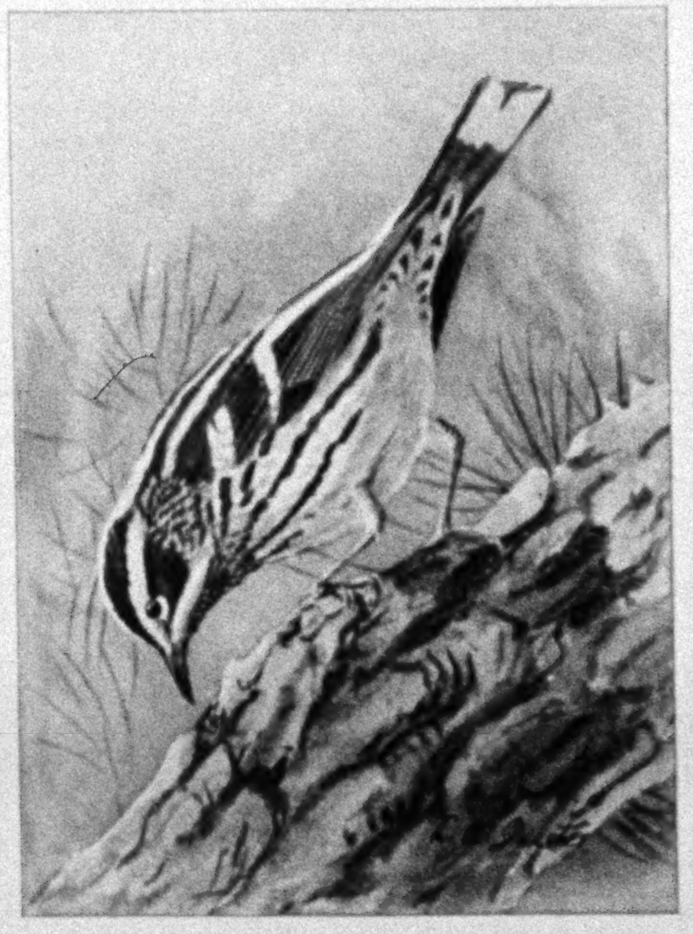
GOLDEN-WINGED WARBLER
Male and Female

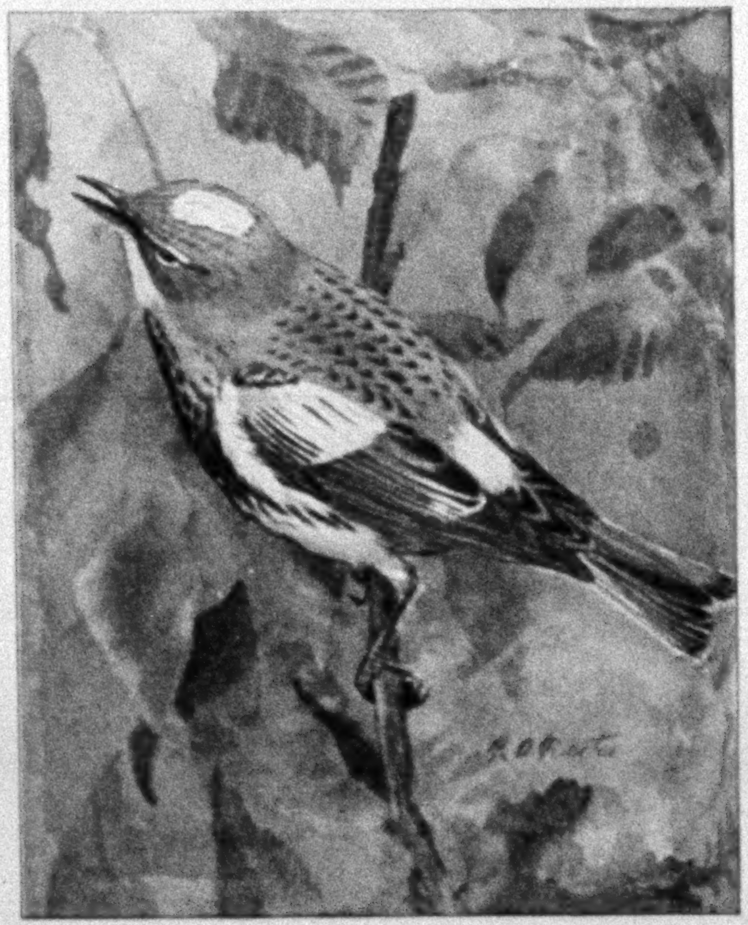


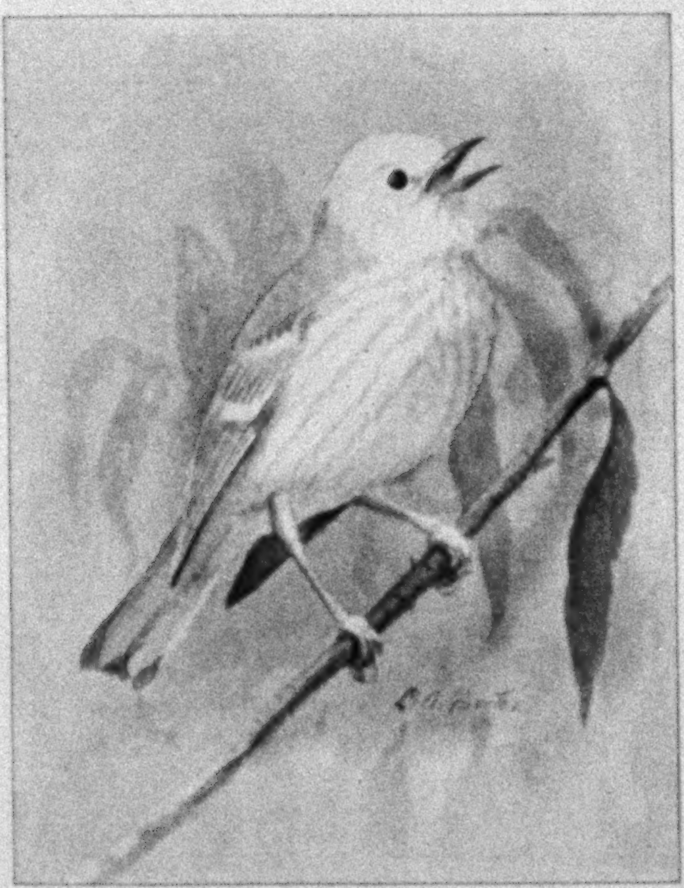
ORANGE-CROWNED WARBLER

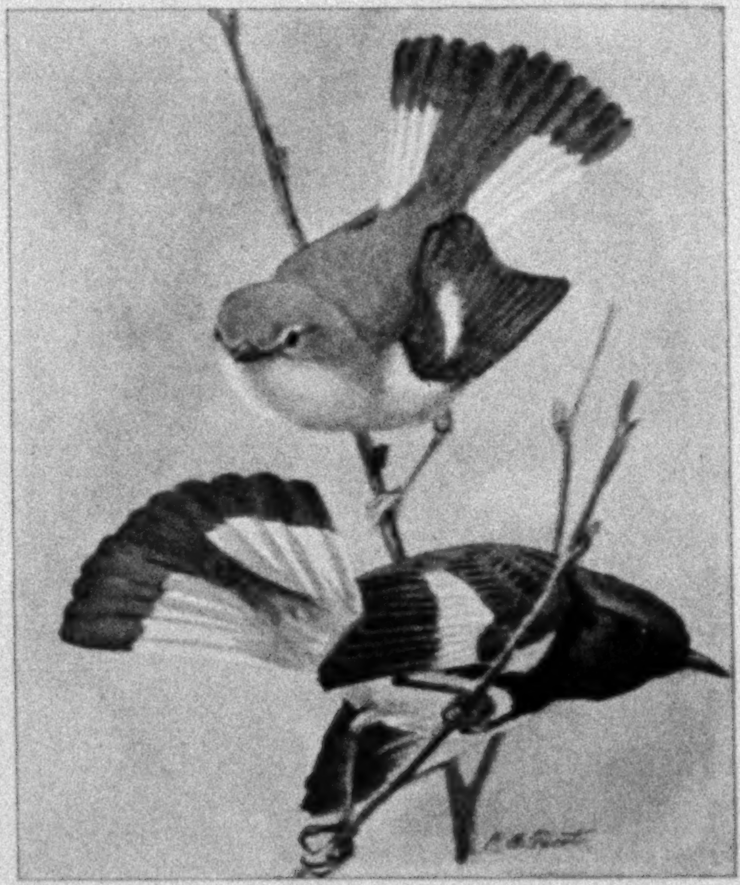


BLUE-WINGED WARBLER









BLACK AND WHITE WARBLER

AUDUBON WARBLER

YELLOW WARBLER

REDSTART
Female and Male

TENNESSEE WARBLER (Vermivora peregrina)

Range: Breeds in Canadian Zone from upper Yukon Valley, southern Mackenzie, central Keewatin, southern Ungava, and Anticosti Island south to southern British Columbia, southern Alberta, Manitoba, northern Minnesota, Ontario, New York (Adirondacks), northern Maine, and New Hampshire; winters from Oaxaca to Colombia and Venezuela.

The Tennessee warbler is by no means as local as its name would imply, but is likely to be found in migration almost anywhere in eastern United States, although it is much more numerous in the Mississippi Valley. Unpretentious both in dress and character, this little bird seems to possess no very salient characteristics. It is, however, not likely to be mistaken for any other species save the Nashville, which it resembles rather closely. During spring migration the Tennessee is apt to be overlooked, since it is prone to keep in the tree-tops. In fall, however, it is found lower down, usually in company with flocks of other warblers, among which it becomes conspicuous by reason of its very inconspicuousness and in contrast with its more gaudy fellows.

Its song has been variously described and may be said to be a simple trill not unlike the chippy. It appears to be certain that the Tennessee, like the Nashville, nests on the ground, but apparently the nesting habits of the bird are comparatively unknown, or at least have not as yet been very fully recorded.

NORTHERN PARULA WARBLER
(Compsothlypis americana usneæ)

Range: Breeds mainly in Transition and Austral Zones, from eastern Nebraska, northern Minnesota, central Ontario, and Anticosti and Cape Breton Islands south to central southern Texas, southern Louisiana, Alabama, Virginia, and Maryland; winters probably in the Bahamas and West Indies to Barbados, and from Vera Cruz and Oaxaca to Nicaragua.

The northern parula, smallest of our warblers, with prevailing colors blue and yellow, is generally distributed during migration and usually found in company with other warblers in leafy trees, which it explores from the lower to the topmost branches. It is one of the most active of the tribe, and is untiring in its pursuit of the minute insects which form its food. Its habit of hanging head downward as it explores a cluster of blossoms suggests a chickadee, and the little fellow is a combination of warbler, kinglet, and chickadee. It is very partial to nesting in usnea moss and so is found in summer along streams or in swampy localities where long streamers of the usnea festoon the trees. The preference of the parula for this moss as a site for its nest is exemplified by a nest I once found in Maryland on the bank of the Potomac, which had been built in the frayed end of an old rope hanging to a sapling and which a short distance away looked to me—and no doubt to the bird—exactly like a clump of usnea. As no usnea occurred in this locality, the bird accepted the frayed rope as a satisfactory substitute, and in so doing followed the spirit if not the letter of family tradition. However, the parula is not strictly limited to usnea for a nesting site and I once saw a pair carrying shreds of bark into a juniper on an island in the Potomac River, the nest being already far advanced toward completion. The parula has a short, buzzing song of which it is prodigal enough, but it is weak and can be heard at no great distance.

CAPE MAY WARBLER (Dendroica tigrina)

Range: Breeds in Canadian Zone from southern Mackenzie, northern Ontario, New Brunswick, and Nova Scotia south to Manitoba, northern Maine, and New Hampshire, and in Jamaica; winters in the Bahamas and the West Indies to Tobago.

Not only is the Cape May one of our most beautiful warblers, but its rarity adds greatly to the zest with which one hails the discovery of even an individual. This species, however, is far more numerous even in New England, especially in fall, than it used to be, and in time the bird may even be listed in many of the Eastern States as among the more common migrants.

Although the bulk of the species undoubtedly migrates north through the Mississippi Valley, rarely a spring passes that a few individuals are not reported about Washington, D. C., and I have seen several in a day. At this time of year the Cape May often forsakes the woodlands and appears in orchards or even in city parks, and probably not a season passes that one or more do not visit the Smithsonian or Agricultural Department grounds. Chapman tells us that in Florida he has seen the species "actually common feeding in weedy patches among a rank growth of pokeberries."

The bird is a rather sluggish, but persistent, insect hunter, though it adds to its bill of fare one item, grapes, which is bringing it into ill repute in parts of Pennsylvania and Virginia. The sharp-pointed bill of the Cape May enables it readily to puncture the skin, its apparent purpose being to satisfy its thirst with the sweet juice.

The Cape May is a persistent songster, but its song is weak and squeaky and by no means worthy of so superb a creature. Comparatively little is recorded of this bird's nesting habits. It is known to summer from northern Maine northward. A nest found by Banks at St. Johns, New Brunswick, was built in a cedar less than three feet from the ground.

BLUE-WINGED WARBLER (Vermivora pinus)

(For illustration, see page 308)

Range: Breeds from southeastern Minnesota, southern Michigan, western New York, Massachusetts (rarely), and southern Connecticut south to northeastern Kansas, central Missouri, Kentucky, Maryland, and Delaware; winters from southern Mexico (Puebla) to Guatemala.

Like the golden-wing, the blue-winged warbler is confined to the Eastern States, but it ranges considerably farther west than that species and occurs almost or quite to the Plains. The blue-wing is in many ways an inconspicuous member of the warbler group, but, because of its perplexing relationship with the golden-wing, Brewster's warbler, and Lawrence's warbler, its ornithological interest is excelled by few. Like the golden-wing, it prefers deciduous trees and second growths and shuns the deeper parts of the forests. It has the habit—shared by the golden-wing and chickadee—of hanging from the under side of any particular cluster it wishes to investigate, and no doubt it makes sure of insects that defy the less careful search of most other species. The ordinary song of the blue-wing is comparable to the golden-wing's, being in fact little else than an apology for a song, with the same insectlike quality. This warbler, though of distinctly arboreal habits, prefers to nest on the ground, or a few inches above it, in a tuft of grass, a clump of goldenrods, or at the foot of a sapling.

The nest is rather bulky, composed of leaves and grasses, put together after the artless manner of its kind; but it is usually well concealed by the surrounding screen of grass or weeds from any but chance discovery.

BLACK-THROATED BLUE WARBLER (Dendroica cærulescens cærulescens)

Range: Breeds in Canadian and Transition Zones from northern Minnesota, central Ontario, and northeastern Quebec south to central Minnesota, southern Michigan, southern Ontario, Pennsylvania (mountains), and northern Connecticut; winters from Key West, Florida, to the Bahamas, Greater Antilles, and Cozumel Island.

The male black-throated blue warbler is one of the most conspicuous of the warblers, his black throat and blue back serving to distinguish him at all times and all seasons. The female, despite her inconspicuous coloration, may always be identified by the white spot on the primaries. The bird is common and ranges widely through eastern North America, and few flocks of migrating warblers are without a greater or less number of this species. Though in the main a common resident of the northern woods, in the mountains it breeds as far south as Maryland, while a color variety of the bird (*Dendroica cærulescens cairnsi*) nests in the southern Alleghenies from Pennsylvania south to Georgia.

Thayer, as quoted by Chapman, says of the song: "There is not a more regularly and amply versatile singer among our eastern warblers than the black-throated blue. It has at least four main songs, on which it is forever playing notable variations."

Whether in its northern or southern home, the black-throated blue warbler builds its nest of bark, roots, and other pliant material, loose and rather bulky, in a variety of saplings, bushes, and weeds, but always a few inches or a few feet from the ground.

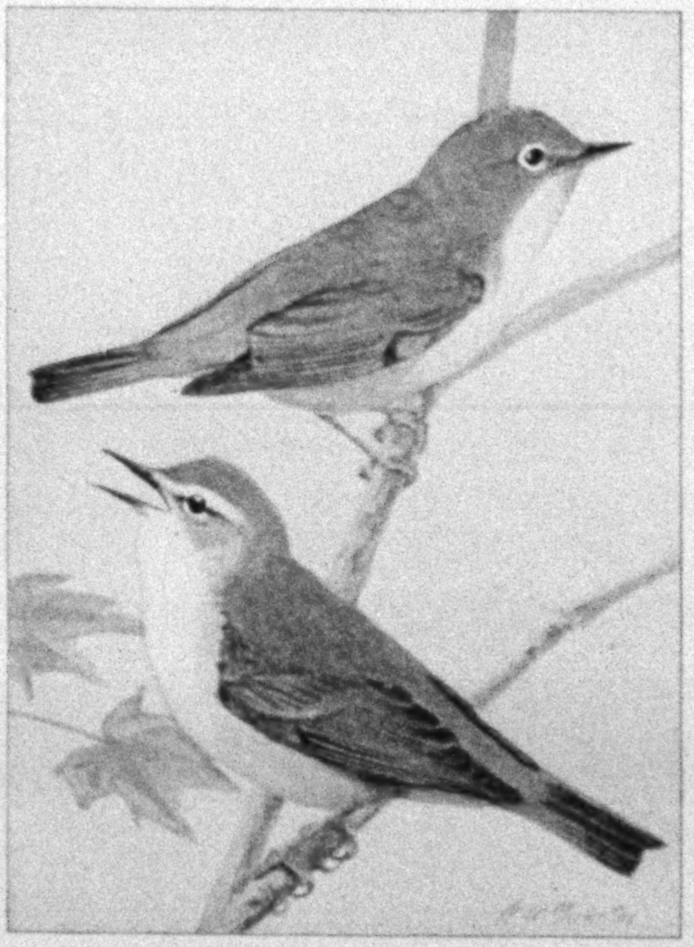
NASHVILLE WARBLER (Vermivora rubricapilla rubricapilla)

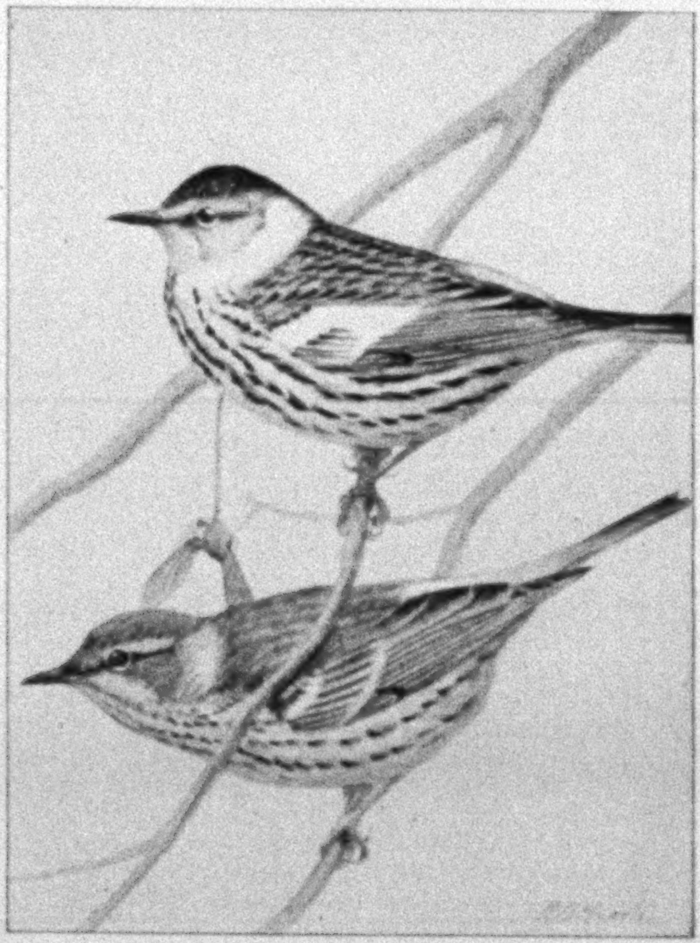
Range: Breeds in Canadian and Transition Zones from southern Saskatchewan, northern Ontario, central Quebec, and Cape Breton Island south to Nebraska, northern Illinois, northern Pennsylvania, northern New Jersey, and Connecticut; winters from Vera Cruz and Chiapas to Guatemala.

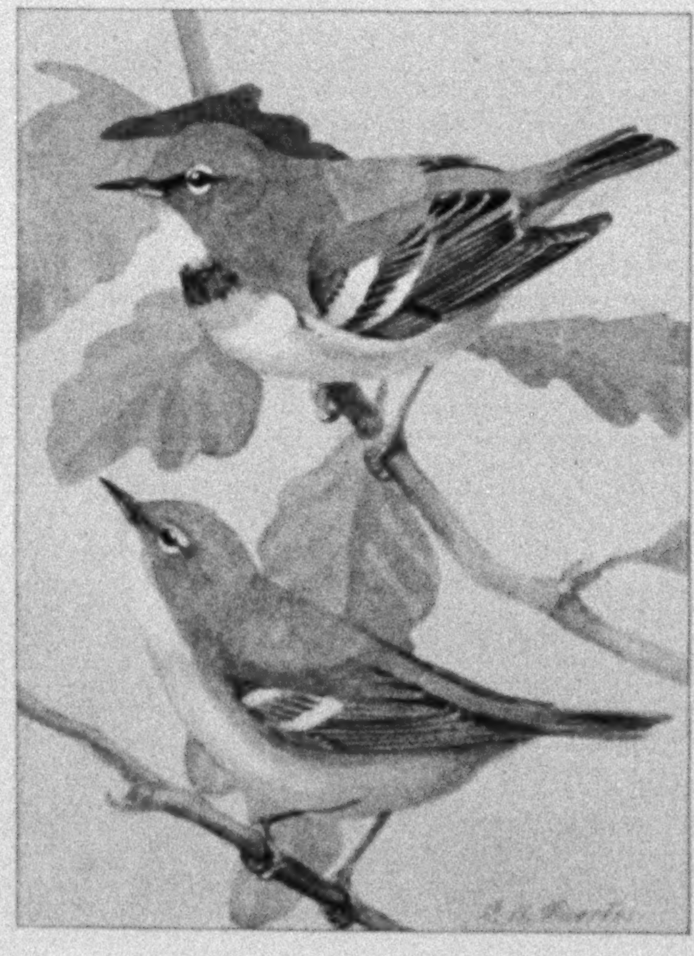
As Wilson never saw but three individuals of the Nashville warbler, all taken near Nashville, Tennessee, he not unnaturally named his new discovery for that city, apparently believing it to be a local species. Far from being so, however, it is now known to inhabit most of the eastern United States. Without doubt the bird is much more common than it was in Wilson's time, perhaps due to the fact that second growth and areas of low woods, its preferred haunts, have largely replaced the denser forests of the early part of the nineteenth century. One cannot wander far afield in Massachusetts in summer time without hearing its song or songs, since it is not only a frequent and vivacious songster, but has a number of ditties in its repertoire, including a flight song.

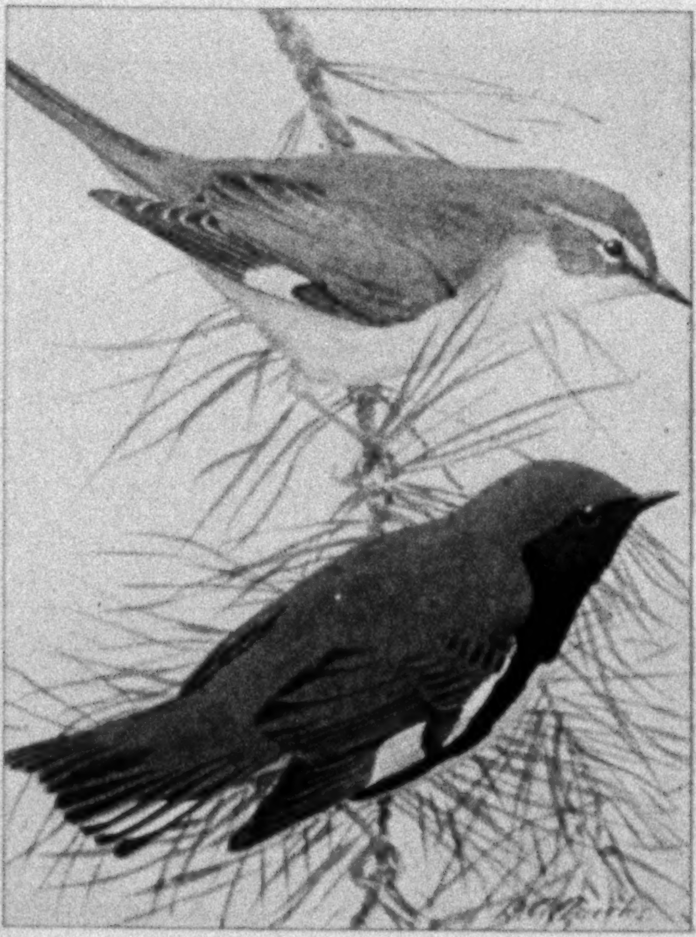
I never found but one nest, and this was on a little pine-wooded knoll in a small depression in the earth, only partially concealed by thin grass. I should never have found it but for the fact that the bird flushed from between my feet. So far as known, the Nashville always nests on the ground. Its preference for the ground as a nesting site is the more remarkable, since the bird rarely or never hunts there, but prefers to seek its insect food among the foliage, often of the tallest elms and chestnuts and other giants of the forest.

The Calaveras warbler (*Vermivora rubricapilla gutturalis*) is a form closely allied to the Nashville, but confined chiefly to the Pacific coast, extending eastward to eastern Oregon and northern Idaho. Fisher is quoted by Chapman as saying: "The Calaveras warbler is a characteristic denizen of the chaparral and is found on both slopes of the Sierra Nevadas about as far south as Mount Whitney. It frequents the belts of the yellow, sugar, and Jeffry pines, and ranges up into the red-fir zone. During the height of the nesting season, while the female is assiduously hunting among the dense cover of bushes, the male is often singing in a pine or fir, far above mundane household cares."







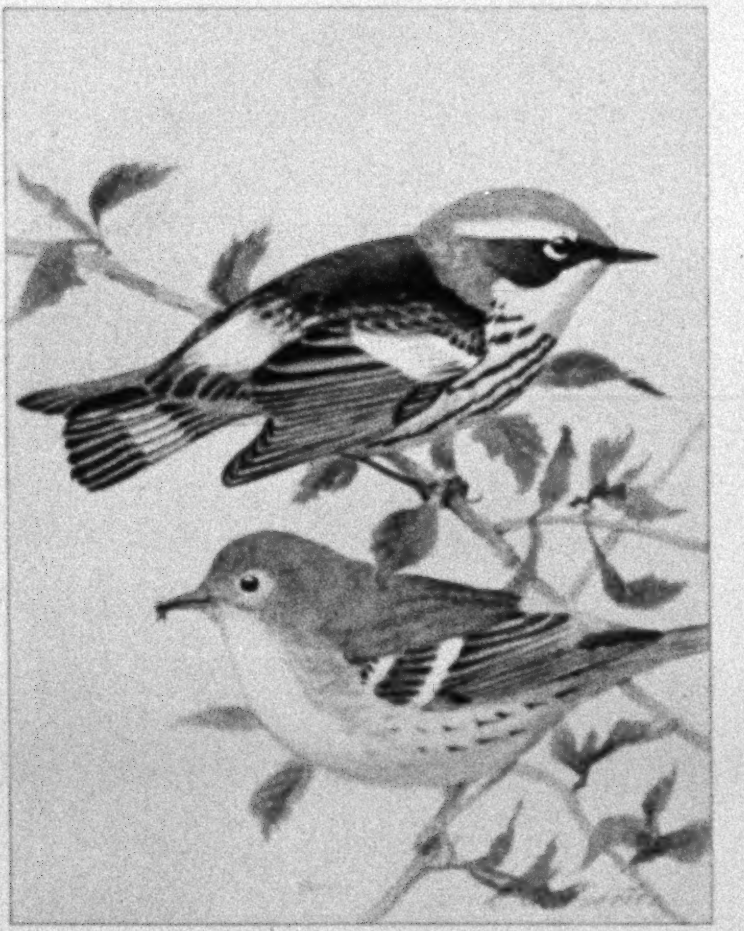


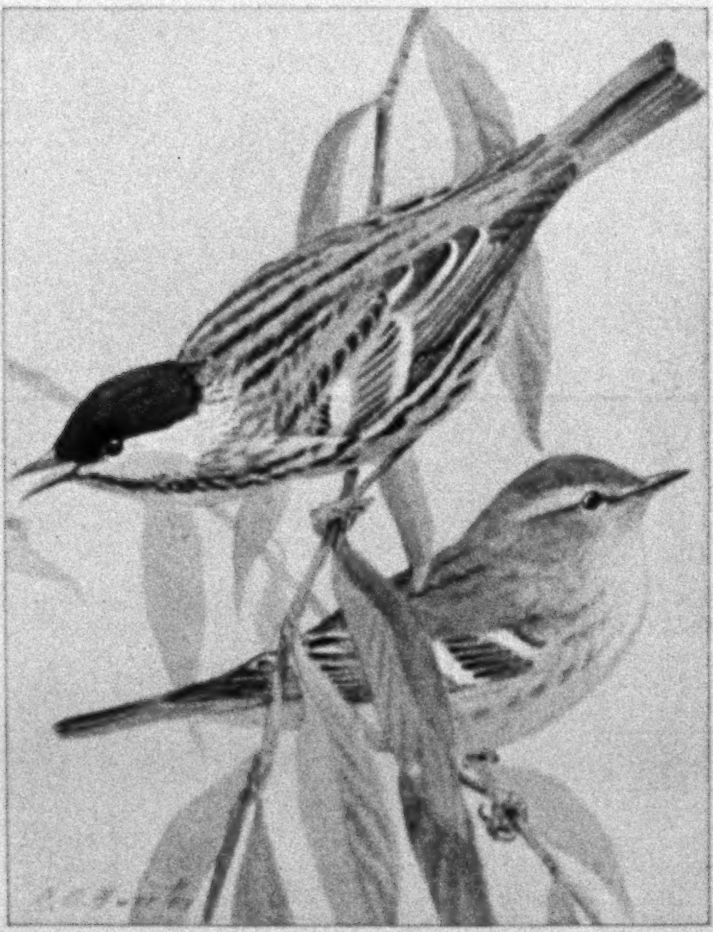
NASHVILLE WARBLER
TENNESSEE WARBLER

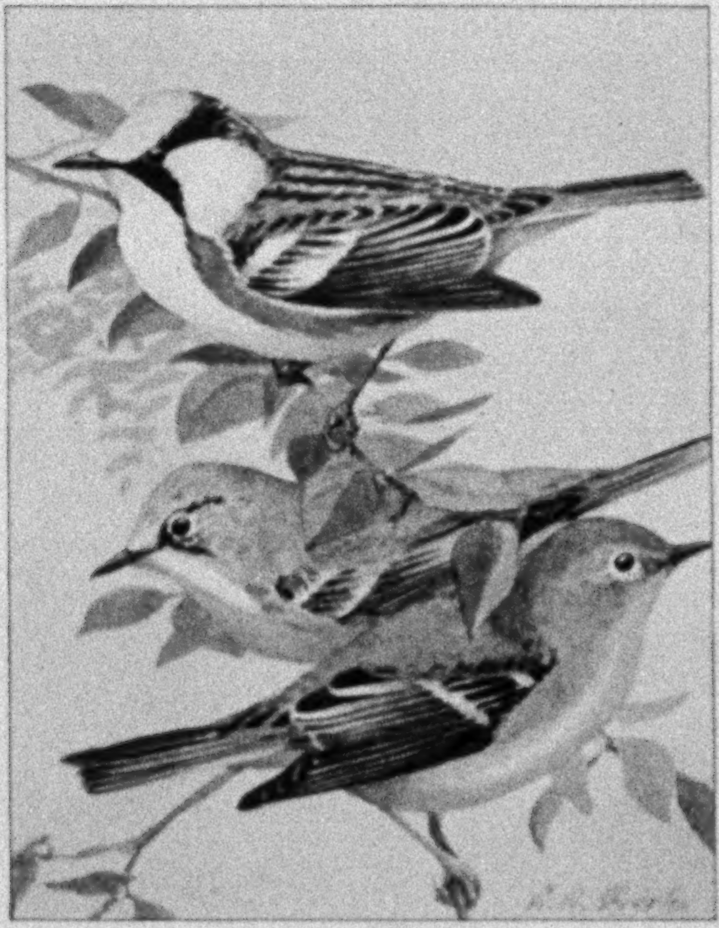
PARULA WARBLER
Male and Female

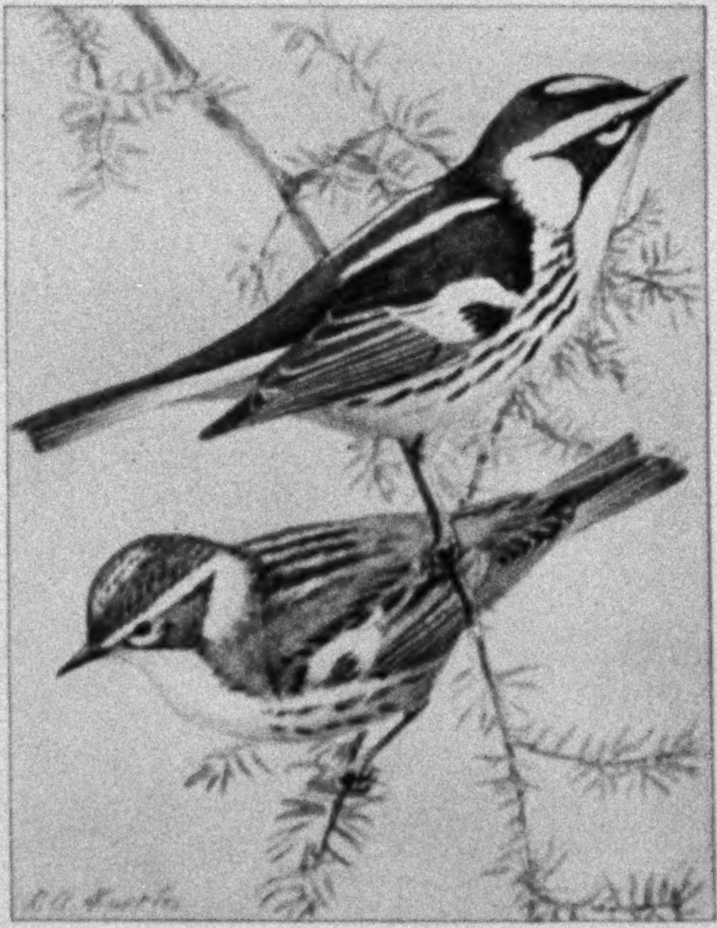
CAPE MAY WARBLER
Male and Female

BLACK-THROATED BLUE WARBLER
Female and Male









MAGNOLIA WARBLER
Adult and Immature Male

BLACK-POLL WARBLER
Male and Female

CHESTNUT-SIDED WARBLER
Male, Immature Male and Female

BLACKBURNIAN WARBLER
Male and Female

CHESTNUT-SIDED WARBLER
(Dendroica pensylvanica)

Range: Breeds mainly in the Transition Zone from central Saskatchewan, northwestern Manitoba, central Ontario, and Newfoundland south to eastern Nebraska, Illinois, Indiana, northern Ohio, northern New Jersey, and Rhode Island, and south in the Alleghenies to Tennessee and South Carolina; winters from Guatemala to Panama.

Since the days of Wilson, Audubon, and Nuttall there is little doubt that the chestnut-sided warbler has increased in numbers, and within its range it is now one of the commoner of the family. It is trim of form and its colors, though not gaudy, have a quiet elegance all their own. During the fall migration it shows little preference in its hunting grounds, but is found with others of its kin in all sorts of woodland haunts and in deciduous as well as coniferous trees. It frequents open woodland tracts in summer and loves to nest in low thickets of hazel and barberry. In favorable localities in Massachusetts I have frequently found half a dozen nests in a morning's search. The nests are made of shreds of bark and grasses and are put together so loosely and carelessly that, in connection with their situation, they unmistakably betray their ownership.

KENTUCKY WARBLER (Oporornis formosus)

(For illustration, see page 317)

Range: Breeds in Carolinian and Austroriparian Zones from southeastern Nebraska, southern Wisçonsin, southeastern and southwestern Pennsylvania, and the Hudson Valley south to eastern Texas, Louisiana, Alabama, and northern Georgia; winters from Tabasco, Campeche, and Chiapas through Central America to Colombia.

The Kentucky warbler, with its rich colors and symmetrical form, is to be classed among the elect of the warbler tribe. Moreover, while locally common it is never so abundant that it does not excite a thrill of interest in the breast of even the most blasé of bird observers. It loves the deep, dark forest and shaded ravine, where the foliage overhead casts heavy shadows on the plentiful undergrowth beneath and where even in midsummer it is moist and cool.

The bird is a persistent singer, and in its own chosen haunts its loud, sweet song may be heard all day long. There is a curious resemblance between its ditty and that of the Carolina wren, and while no one can mistake the two songs when heard close by, at a distance even the expert may be puzzled. This warbler finds most of its food on the ground, and the thick undergrowth in which it hunts makes it difficult to learn much of its habits by observation, since it is difficult to keep an individual in sight many minutes at a time.

It builds a rather loose, bulky nest, largely of leaves and grasses, which is placed either on or just above the ground, and although it may seem to have been rather artlessly located it is in reality well protected by the surrounding vegetation with which it blends, and hence generally escapes the observation of all but the most persistent and sharp-sighted of observers.

WILSON WARBLER (Wilsonia pusilla pusilla)

(For illustration, see page 320)

Range: Breeds in Boreal Zones from tree limit in northwestern and central Mackenzie, central Keewatin, central Ungava, and Newfoundland south to southern Saskatchewan, northern Minnesota, central Ontario, New Hampshire, Maine, and Nova Scotia; winters in eastern Central America from Guatemala to Costa Rica.

This tiny warbler ventures farther north than many bigger and apparently hardier species, and Nelson found it in Alaska "one of the commonest of the bush-frequenting species, ... extending its breeding range to the shores of the Arctic Ocean wherever it finds shelter." Cooke also found it in Colorado breeding from 6,000 to 12,000 feet elevation.

The black-cap is a nervous, energetic, little fellow, now essaying the rôle of flycatcher, now hunting for insects among the foliage, while ever and anon it jerks its tail up and down as though constant motion were the chief end of existence. It has a short, bubbling, warbling song which has been likened to the songs of several other species, but which possesses a tone and quality all the bird's own. Its nest is built on the ground, is composed chiefly of grasses, and the eggs do not differ in essential respects from those of other warblers.

It is noteworthy that the West Coast form of the black-cap chryseola breeds as far south as Los Angeles, and that its nest instead of being built on the ground is placed in the crotch of a limb or in a bunch of weeds or nettles.

CANADA WARBLER (Wilsonia canadensis)

(For illustration, see page 320)

Range: Breeds in the Canadian Zone and casually in the Transition from central Alberta, southern Keewatin, northern Ontario, northern Quebec, and Newfoundland south to central Minnesota, central Michigan, southern Ontario, central New York, and Massachusetts, and along the Alleghenies to North Carolina and Tennessee; winters in Ecuador and Peru.

The Canada warbler is always associated in my mind with the black-cap, in company with which it is frequently found during migration. The association is purely accidental and results from a common preference for the same hunting grounds. A path or road through swampy ground, especially if bordered by old willow trees, is sure to have its quota of this warbler and the Wilson black-cap during migration.

Like the black-cap, the Canada warbler is half flycatcher, half warbler, and the click of the bird's mandibles as they close on some hapless insect caught in mid-air is often the first indication of its presence. Unlike many of the family, it sings much during its spring migration. The song is loud for the size of the warbler and is very characteristic. The bird builds a rather bulky nest of leaves and grasses, which it places in a mossy bank or under a moss-grown log. It is an assiduous and active insect hunter and gleans among the leaves and twigs after the fashion of the parula warbler.

MAGNOLIA WARBLER (Dendroica magnolia)

Range: Breeds in Canadian and upper Transition Zones from southwestern Mackenzie, southern Keewatin, northern Quebec, and Newfoundland south to central Alberta, southern Saskatchewan, Minnesota, northern Michigan, and northern Massachusetts, and in the mountains of West Virginia, Maryland, Pennsylvania, and New York; winters from southern Mexico (Puebla and Chiapas) to Panama.

The magnolia, or black and yellow warbler, as I like best to call it, is one of our most beautiful warblers, and fortunately, being one of the commonest of the tribe, is easily met with by any one willing to take a little pains. When busy at its self-imposed task of hunting insects—and when is it not busy—it is by no means shy, and may be watched at close range with or without the aid of a field glass. Whenever or however met, the sight of a full-plumaged male resplendent in the gold and black livery of spring is worth a long journey.

The bird ranges over much of eastern North America as far west as the Plains, and toward the north reaches the Mackenzie region. In the mountains it breeds here and there as far south as Maryland. In migration the magnolia shows no preference for special localities, but occurs in upland woods and lowland shrubbery where is promised a good harvest of insects. Like so many of its fellows, it finds rich hunting grounds in gray birches, and few large companies of warblers traverse gray birch woods without their complement of these beautiful and sprightly wood nymphs. The magnolia warbler is a versatile, though scarcely an accomplished, songster, and phrases its song in a number of different ways. Many of its nests have been found in the northern woods, some of them in small firs or spruces only a few feet from the ground.

BLACK-POLL WARBLER (Dendroica striata)

Range: Breeds in Hudsonian and Canadian Zones from limit of trees in northwestern Alaska, northern Mackenzie, central Keewatin, northern Ungava, and Newfoundland south to central British Columbia, Manitoba, Michigan, northern Maine, and mountains of Vermont and New Hampshire; winters from Guiana and Venezuela to Brazil.

The black-poll is one of our commonest warblers, in both spring and fall, and probably heads the warbler list in point of numbers. So far as superficial observations go, the bird would seem to be no spryer, no more industrious, and no more adept in hunting food than its compeers; but for some reason or other, possibly greater adaptability, it seems to have succeeded beyond most of its kind in extending its breeding range and in multiplying. It is a late migrant, both spring and fall, and when the hordes of black-polls put in an appearance, especially in the vernal season, one may know that the end of the migrating season is at hand. A laggard in spring, it is also a loiterer in fall, and occasionally a flock of black-polls will linger in some sheltered valley where food is abundant till long after others of the family have passed southward.

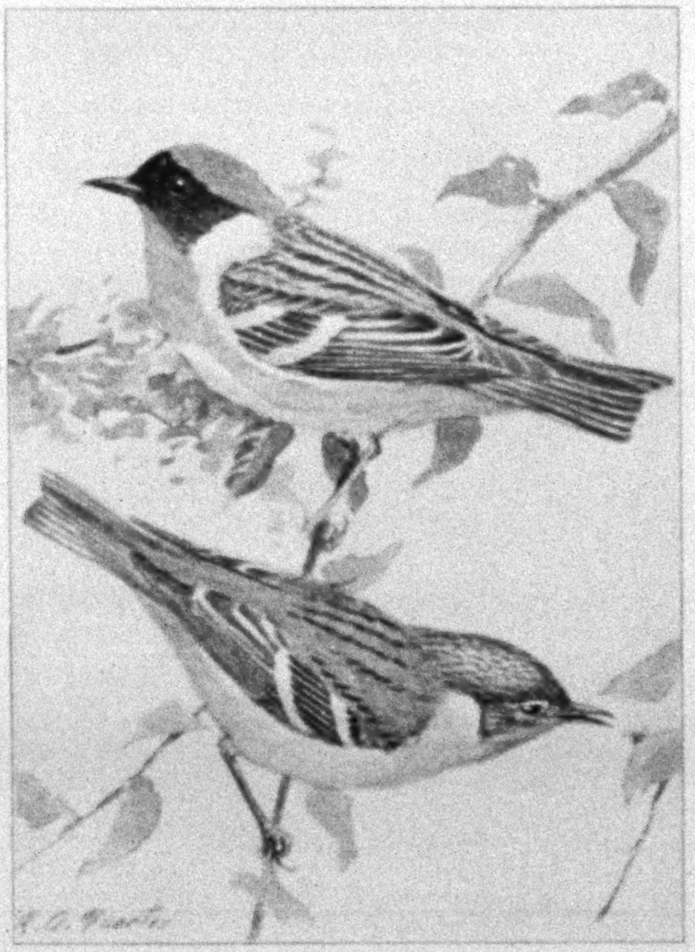
The bird nests chiefly in the far north, though it summers as far south as the Adirondacks. As it winters in South America, there are thus at least 5,000 miles between its extreme northern and southern habitats. Chapman notes that it is one of the very few warblers that migrate directly across the West Indies from South America to Florida. It makes its appearance in the Gulf States about the last of April. As pointed out by Professor Cooke, the black-poll is "one of the greatest travelers among the warblers. The shortest journey that any black-poll performs is 3,500 miles, while those that nest in Alaska have 7,000 miles to travel to their probable winter home in Brazil." One can only wonder that so small a bird has the requisite courage and strength to undertake twice a year such a vast journey, every stage of which is compassed by dangers of one sort or another.

BLACKBURNIAN WARBLER (Dendroica fusca)

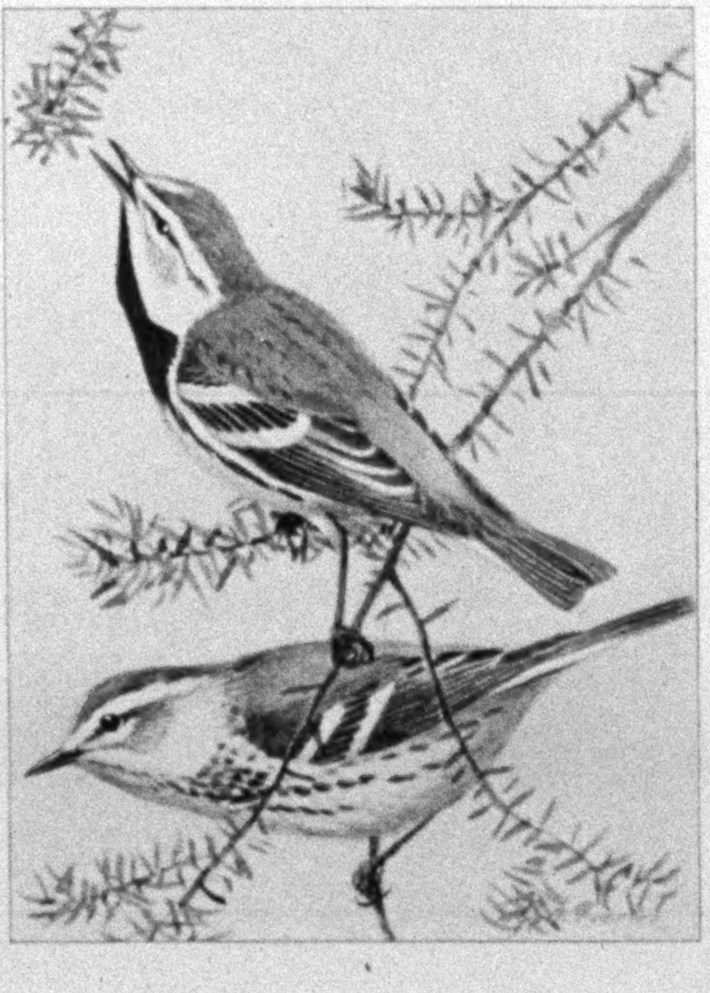
Range: Breeds in lower Canadian and upper Transition Zones from Manitoba, southern Keewatin, central Ontario, Quebec, and Cape Breton Island to central Minnesota, Wisconsin, northern Michigan, Massachusetts, and Connecticut, and in the Alleghenies from Pennsylvania to Georgia and South Carolina; winters from Colombia to central Peru and less commonly north to Yucatan.

The Blackburnian, one of the gems of the warbler tribe, has a rather wide range in eastern North America, extending west as far as the Plains and north to Manitoba. Apparently it is nowhere, at least in migration, an abundant warbler, and there are few field observers so seasoned to the sight of its beautiful colors as not to be thrilled by sight of the bird. In migration its habits offer nothing peculiar. In the Atlantic States in September careful scrutiny of a migrating band of warblers and other birds will often reveal the presence of one or perhaps half a dozen Blackburnians. About Mount Monadnock, Gerald Thayer finds it a "very common summer resident. It is one of the four deep-wood warblers of this region, the other three being the black-throated blue, the Northern parula, and the Canada."

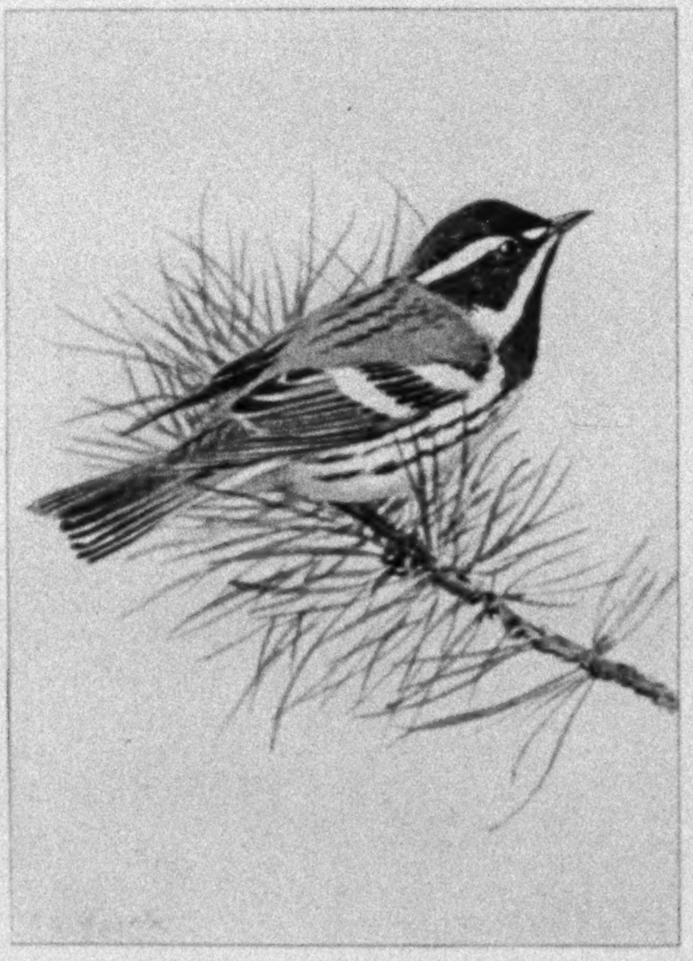
The Blackburnian favors very big trees, particularly hemlocks, and spends most of its life high above the ground. As Thayer says, the Blackburnian is the "preeminent forest warbler of the group, the lover of deep mixed growth and the upper branches of the biggest conifers." The bird has a thin, shrill voice and utters at least two songs or variations which some think resemble the black-throated green's. Whatever the tree selected, be it a hemlock or a deciduous tree, the nest is placed well up among the branches and well out toward the end, where it is safe from all enemies that do not possess wings.



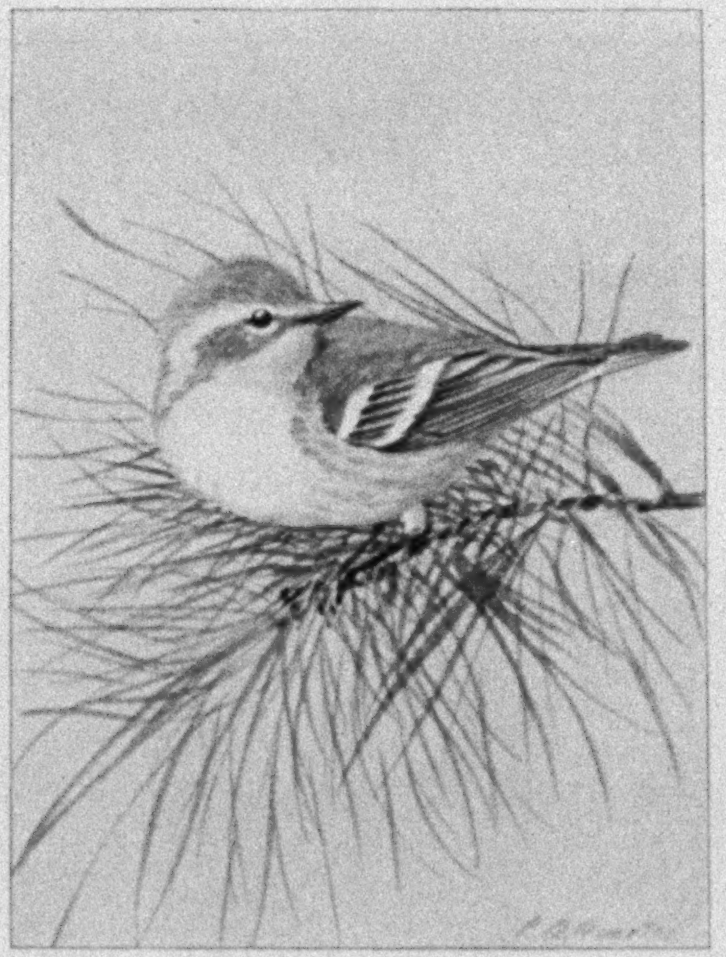
BAY-BREASTED WARBLER
Male and Female



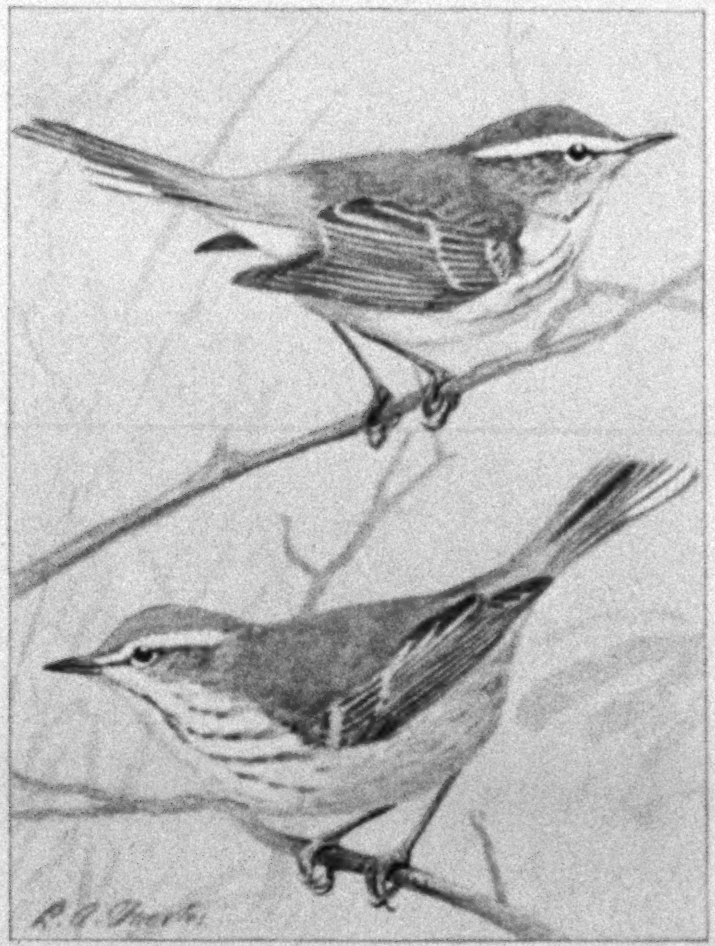
BLACK-THROATED GREEN WARBLER
Male and Female

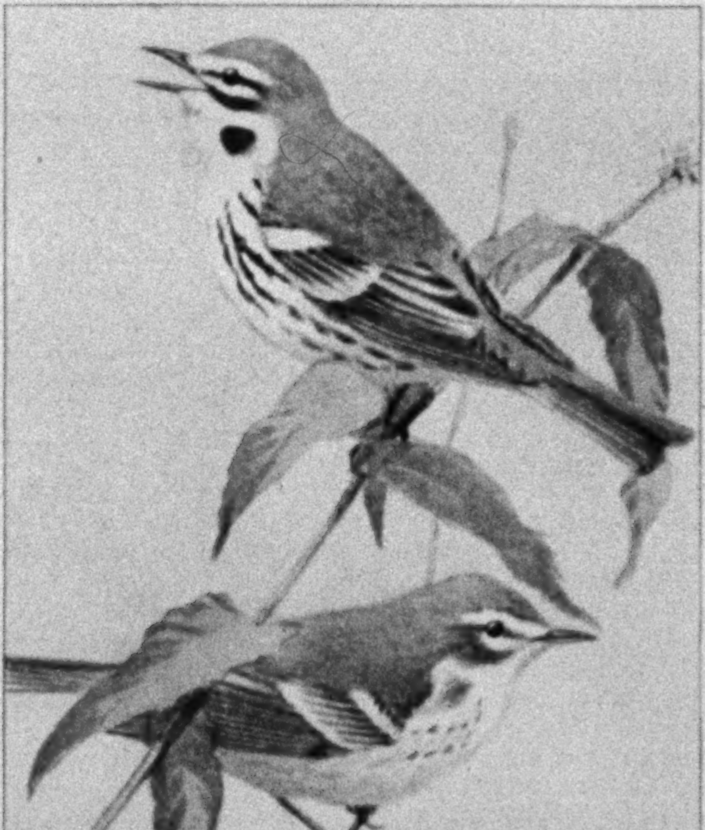


BLACK-THROATED GRAY WARBLER



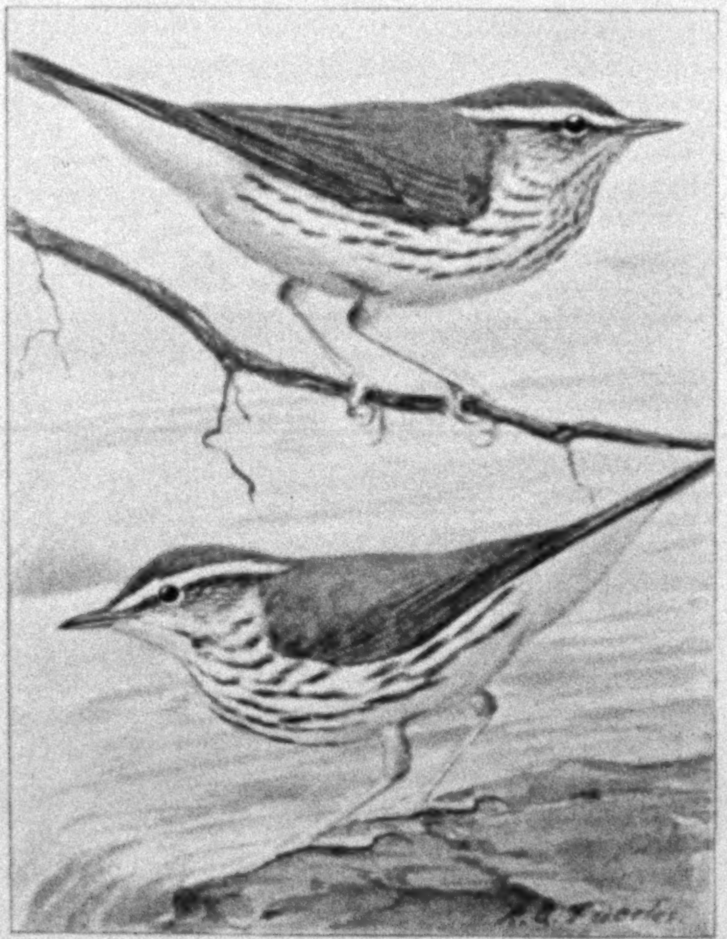
PINE WARBLER

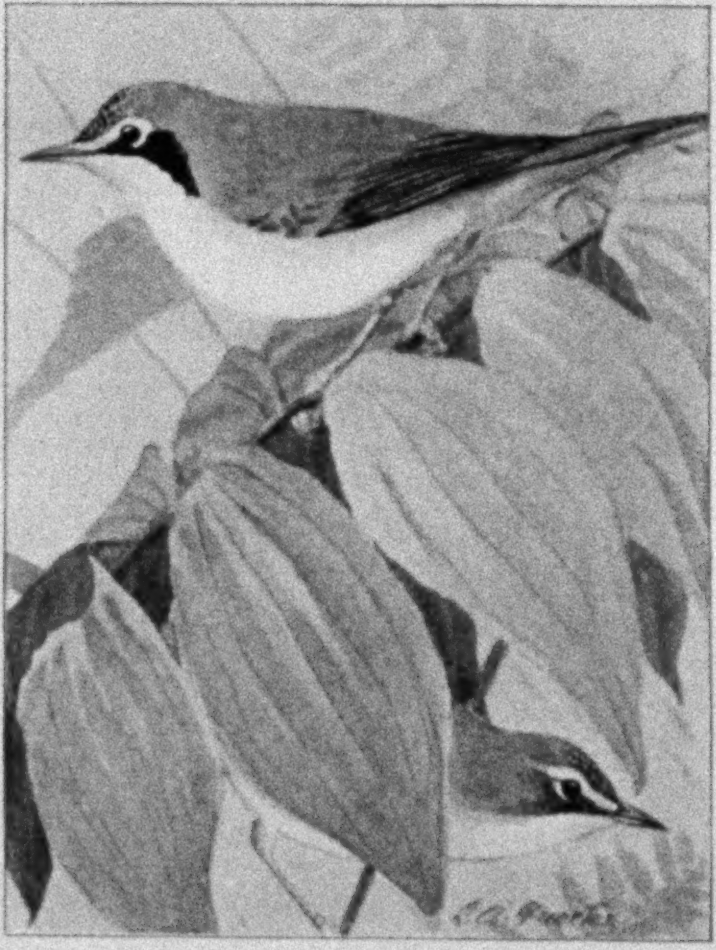




PALM WARBLER
YELLOW PALM WARBLER

PRAIRIE WARBLER
Male and Female





NORTHERN WATER-THRUSH
LOUISIANA WATER-THRUSH

KENTUCKY WARBLER
Male and Female

BAY-BREASTED WARBLER (Dendroica castanea)

Range: Breeds in Canadian Zone from northeastern Alberta, southern Keewatin, southern Ungava, and Newfoundland south to southern Manitoba, northern Maine, and mountains of New Hampshire; winters in Panama and Colombia.

The bay-breast appears to be increasing in numbers. Forty years or so ago it was rare in Massachusetts in fall, and search by the most vigilant collector during the entire autumn migration was rarely rewarded by the sight of more than one or two. Today it is far different, and not a season passes that at the proper time and place careful search will not reveal a dozen or more mingled with others of the warbler family. In spring the bird has always been uncommon or altogether wanting in the Eastern States, as it migrates up the Mississippi Valley, spreading out to occupy northern Maine and other of its northern summer haunts. In summer it frequents coniferous forests, and often nests in hemlocks.

BLACK-THROATED GRAY WARBLER (Dendroica nigrescens)

Range: Breeds in Transition Zone from southern British Columbia, Nevada, northern Utah, and northwestern Colorado south to northern Lower California, southern Arizona, and northern New Mexico; winters in southern Lower California and in Mexico from Durango to Michoacan, Vera Cruz, and Oaxaca.

The handsome black-throated gray warbler is exclusively western in distribution, from our southern border to British Columbia. Though I have seen it many times, I am unable to recall any especially salient characteristics possessed by the species. Like others of the family, the black-throat is an active insect hunter, both among the oaks and various kinds of scrub growths of the valleys and the conifers of higher altitudes. The bird seems naturally to suggest the black-throated green warbler of the Eastern States, but I am not aware that in habits it is more nearly comparable to that species than to others. In choice of nesting sites it exhibits a wide range of taste, and nests have been found in scrub oaks, pines, and firs, and varying in height from the ground from 3 or 4 feet up to 50 feet or more.

BLACK-THROATED GREEN WARBLER (Dendroica virens)

Range: Breeds in lower Canadian and Transition Zones from west, central, and northeastern Alberta, southern Manitoba, central Ontario, northeastern Quebec, and Newfoundland south to southern Minnesota, southern Wisconsin, northern Ohio, northern New Jersey, Connecticut, and Long Island, New York, and in the Alleghenies south to South Carolina and Georgia; winters in Mexico (Nuevo Leon to Chiapas and Yucatan), Guatemala, Costa Rica, and Panama.

What true bird lover is there who does not cherish fond memories of certain birds? The very name of black-throated green warbler carries me back to boyhood days and to a certain pine-crested hill in Massachusetts, from which was wafted on an early spring morning the song of this warbler, heard by me then for the first time. The many years since elapsed have not effaced the sweet strains, and I seem to hear them now as they were borne that morning by the pine-scented spring breeze. I can vividly recall the pleasure the song occasioned and the satisfaction of having added one more bird to my small list of avian acquaintances. Those were the days of mystery, when the woods seemed filled with unknown birds, and secrets lurked in every thicket and met the seeker at every turn. They were the times when bird books were few, keys unknown, and the keen eyes of youth far more satisfactory than the best field glasses of the present day.

The black-throated green is one of the commoner of our eastern warblers and one of the first to engage the attention of the bird student. During migration it may be met with in every kind of woodland, where it is at home, both high and low, ever pursuing with tireless energy its quest for insects. It has two songs, or rather one song delivered in two different ways, sprightly, sweet, and perfectly characteristic. In summer it is partial to coniferous woods, especially white pines and hemlocks, and it frequently nests in these, though also in birches and alders.

PINE WARBLER (Dendroica vigorsi)

Range: Breeds in Transition and Austral Zones from northern Manitoba, northern Michigan, southern Ontario, southern Quebec, and New Brunswick south to east-central Texas, the Gulf States, and Florida; winters from southern Illinois and coast of Virginia to Florida, eastern Texas, and Tamaulipas.

Few of our birds are so aptly named as the pine warbler, which first, last, and all the time, except in migration, resorts to pine woods. It summers in them in the north and it winters in them in the south. Even its feathers often bear conclusive evidence of its predilection for pines, being often besmeared with their gum. Among its bright-hued relatives the pine warbler cuts but a poor show with its somber green and brown coat, which, at least in Florida, is often dingy and smoke-begrimed from contact with burnt timber.

Though distinctively a warbler and not a creeper, the pine warbler is more deliberate in its motions than most of its kind and, somewhat in the manner of the creeper, moves among the branches or over the trunks in search of its insect food. For a warbler it is an early migrant and reaches the latitude of Massachusetts soon after the middle of April. Indeed, its nest contains eggs or young while the late migrants are still passing north. Its song has little variation, but while monotonous is pleasing and sweet, far sweeter than the trill of the chipping sparrow, which it recalls. Naturally the pine warbler nests in pines, usually rather high up, either on a horizontal limb or among the twigs at the extremity of a limb.

PALM WARBLER (Dendroica palmarum palmarum)

Range: Breeds in Canadian Zone from southern Mackenzie (Fort Simpson) and central Keewatin south and southeast to northern Minnesota; winters from southern Florida and the Bahamas to the Greater Antilles and Yucatan.

The palm warbler, including under this name both the eastern and western, or yellow (*Dendroica palmarum hypochrysea*), representatives of the species, is for the most part an inhabitant of the Mississippi Valley and the region eastward, spending its nesting season chiefly north of our northern frontier. It is, therefore, as a spring and fall migrant that it is best known. Its somewhat subdued tints of olive and yellow streaked with brown class it among the less conspicuous members of the warbler group, but its motions and habits unmistakably distinguish it from its fellows. Though often associating with other warblers as they flit from tree to tree, the palm warbler keeps close to Mother Earth and not infrequently visits pastures and stubble far from cover of any sort. Favorite hunting grounds are old fences and even buildings.

Perhaps the most salient characteristic of this little warbler is the almost incessant tip-up motion of its tail, in which respect it recalls a bird in no wise related to it—the spotted sandpiper, or "tip-up," of pond and stream. It nests on the ground. Its song is a low, faint trill, characteristically warblerlike, but in no way remarkable. It winters in great numbers in Florida, and in 1871 I found it wintering in loose flocks of considerable size near Lakes Borgne and Ponchartrain, Louisiana, where it fed chiefly on the ground and among low bushes.

PRAIRIE WARBLER (Dendroica discolor)

Range: Breeds chiefly in Carolinian and Austroriparian Zones from southeastern Nebraska, eastern Kansas, southern Ohio, southwestern Pennsylvania, southern New Jersey, and (along the coast) from Massachusetts south to southwestern Missouri, northern Mississippi, northwestern Georgia, Florida, and the Bahamas, and north locally to central Michigan, southern Ontario, and New Hampshire; winters from central Florida through the Bahamas and the West Indies.

The prairie, a dainty little warbler in its variegated black, yellow, and chestnut dress, is common from Florida to the New England States and from Nebraska and Kansas east to the Atlantic. Its choice of habitat varies considerably locally; but wherever it may be found there is nothing in the habits of the bird that justifies its common name, which is entirely misleading, since it has no predilection for prairies or indeed for open country of any sort. In Massachusetts it frequents rocky barberry pastures on open hillsides dotted with cedars. About Washington it frequents sprout lands, and when it first arrives from the south is found almost exclusively in groves of the Jersey scrub pine or in junipers. It is an active insect hunter, moving rapidly among the foliage, now here, now there, ever and again sending forth its characteristic song. Its unusually compact and pretty nest is often placed in the crotch of a barberry bush in Massachusetts or elsewhere in junipers or in low deciduous bushes.

NORTHERN WATER-THRUSH (Seiurus noveboracencis noveboracensis)

Range: Breeds chiefly in Canadian Zone from northern Ontario, northern Ungava, and Newfoundland south to central Ontario, northwestern New York, and northern New England, and in mountains south to Pennsylvania and West Virginia; winters from the Valley of Mexico to Colombia and British Guiana, and from the Bahamas throughout the West Indies.

So far as appearance, motions, and habits go, the water-thrush is more thrush than warbler, and one who sees him for the first time walking sedately along with teetering tail may well be excused for declining to class him with the warbler family. He is partial to swamps and wet places, is a ground frequenter, and in no real sense arboreal. Though an inhabitant of the wilds and showing strong preference for swampy ground, he not infrequently visits gardens even in populous towns, and seems to be quite at home there in the shade of the shrubbery. A sharp and characteristic alarm note often calls the attention of the chance passer-by, who would otherwise overlook the bird in its shady recesses.

Few who are privileged to hear its notes will dissent from the opinion that the water-thrush is one of the foremost of the warbler choir and a real musician. The bird is a ground builder, placing its nest under the roots of an upturned tree, in banks, or in cavities of various sorts.

LOUISIANA WATER-THRUSH (Seiurus motacilla)

Range: Breeds mainly in Carolinian Zone from southeastern Nebraska, southeastern Minnesota, and the southern parts of Michigan, Ontario, New York, and New England south to northeastern Texas, northern Georgia, and central South Carolina; winters from northern Mexico to Colombia, the Greater Antilles, Antigua, and the Bahamas.

The Louisiana water-thrush, though not unlike its northern relative in general appearance, is very different in disposition and habits, and I know of no bird more shy and difficult to watch. It frequents the banks and neighborhood of clear streams that run through woodlands and tangles of laurel. One hears the sharp note of challenge or the wild ringing song, but any attempt to see the singer, unless made with the utmost caution, will end in disappointment or in a casual glimpse of a small, brown bird flitting like a shadow through the brush.

The song of either water-thrush is of a high order of excellence. I cannot but think, however, that the song of the Louisiana water-thrush gains over that of its tuneful rival by partaking somewhat of the nature of its wild surroundings, and that its song is enhanced by its accompaniments—the murmur of the woodland brook and the whisper of the foliage—among which it is heard. Quite a number of our birds habitually teeter or wag their tails, but few as persistently as the water-thrushes.

KENTUCKY WARBLER (Oporornis formosus)

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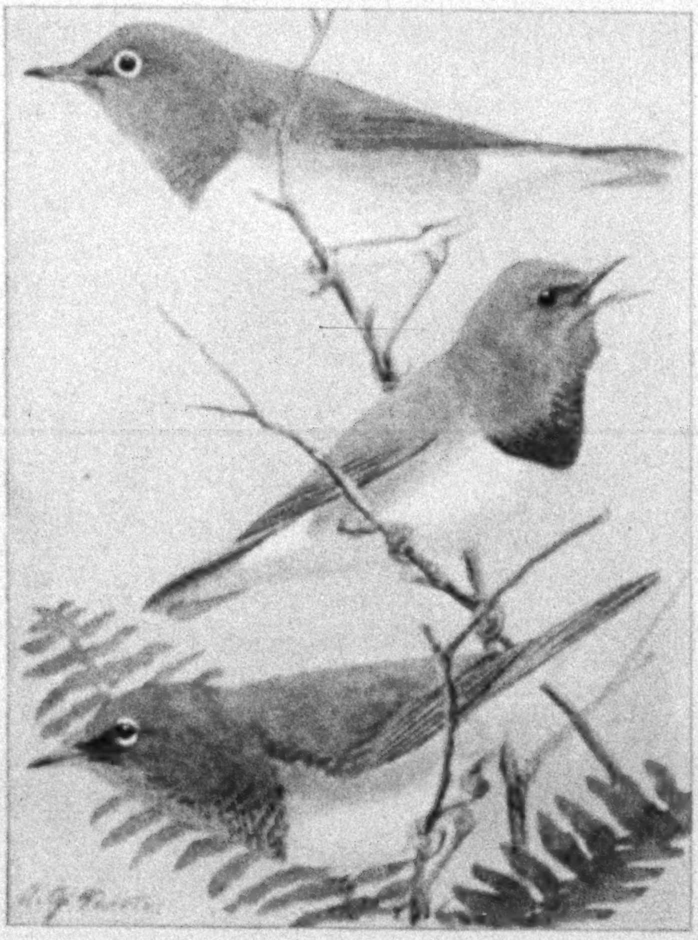
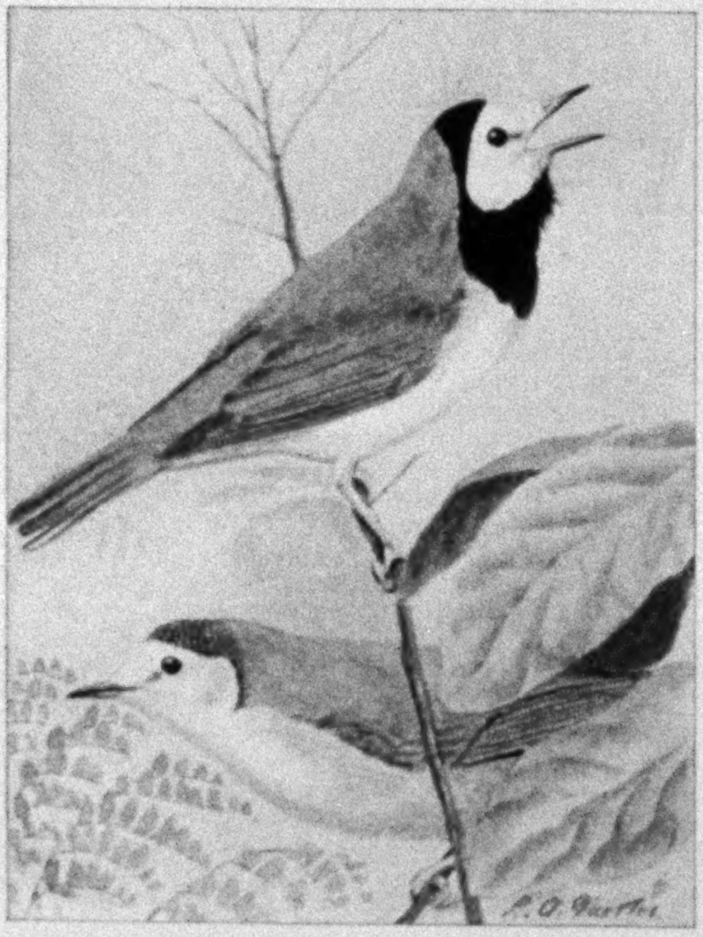
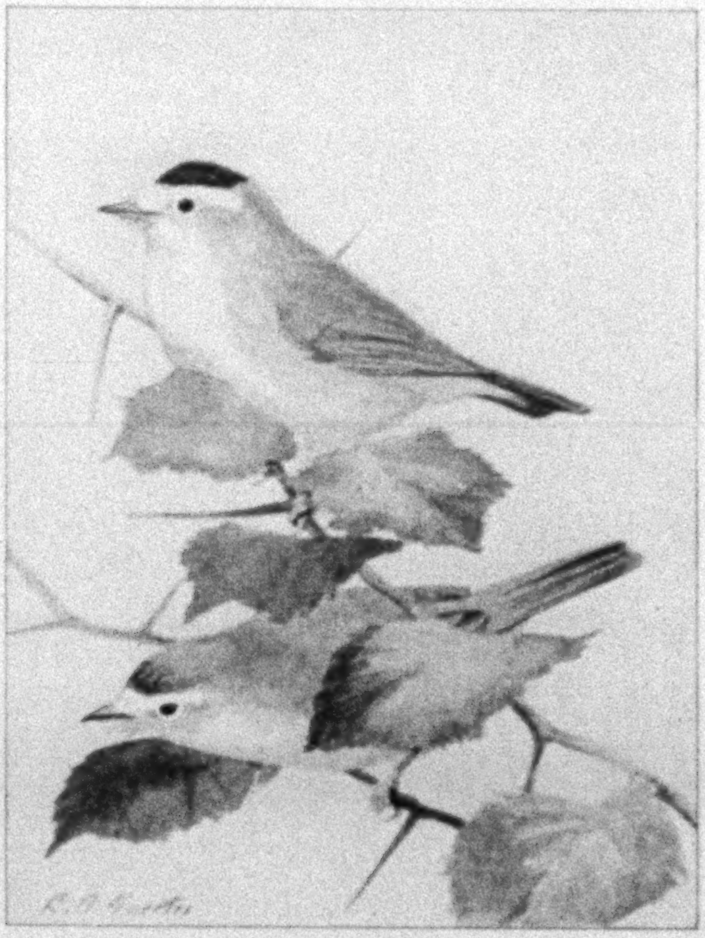
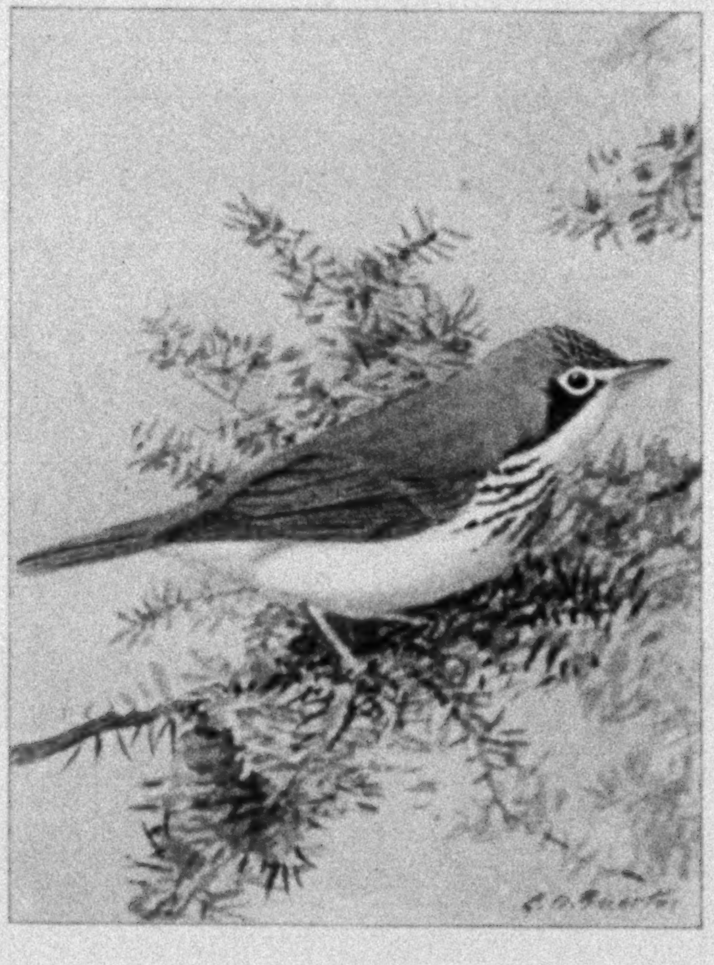




CONNECTICUT WARBLER
MOURNING WARBLER
MACGILLIVRAY WARBLER

HOODED WARBLER
Male and Female





WILSON WARBLER
Male and Female

CANADA WARBLER

CONNECTICUT WARBLER (Oporornis agilis)

Range: Breeds in Canadian Zone from Manitoba to central Minnesota and northern Michigan; winters in South America, probably in Colombia and Brazil.

Discovered by Wilson in Connecticut early in the last century, the Connecticut warbler remained almost unknown for many years until, September 7, 1870, I found it numerous in the fresh pond swamps of Cambridge. The bird thus rediscovered rapidly came into the limelight, and there are few eastern observers of the present day who are not tolerably familiar with the appearance and habits of this warbler. In fall it is common throughout eastern United States in low, swampy thickets. It habitually feeds on the ground, and is so silent and shy as easily to escape the notice even of one on the lookout for it, especially as its single chirp of alarm is infrequently uttered. In fact, the only way to be sure that one or more Connecticut warblers are not concealed in the shrubbery of a suspected locality is to beat over it systematically, not once, but many times.

When started, the warbler flies noiselessly to the nearest shaded perch, and there sits motionless, watching the intruder, till it decides either to renew its interrupted search for food or to seek some distant place, far from the danger of intrusion. Under such circumstances its motions are highly suggestive of the staid and quiet thrushes, and in no respect similar to the sprightly warblers. The Connecticut is one of the few species that for some reason choose distinct routes of migration, as in spring it passes up the Mississippi Valley instead of through the Atlantic Coast States, which form its southern route in fall. The bird is known to breed in Michigan, Wisconsin, Minnesota, Manitoba, and elsewhere in the north. The only nest so far found, however, appears to be one discovered by Seton in Manitoba. As was to be expected, it was on the ground.

MOURNING WARBLER (Oporornis philadelphia)

Range: Breeds in lower Canadian Zone from east central Alberta, southern Saskatchewan, southwestern Keewatin, Nova Scotia, and Magdalen Islands south to central Minnesota, Michigan, central Ontario, and mountains of New York, Pennsylvania, Massachusetts, and West Virginia; winters from Nicaragua and Costa Rica to Colombia and Ecuador.

The mourning warbler is a near cousin of the Maryland yellow-throat and, like that bird, sticks rather closely to Mother Earth, being no lover of tree-tops. Unlike the yellow-throat, however, it is one of the rarest of the family, and few ornithologists have ever enjoyed opportunity to get on familiar terms with it and to observe its habits adequately.

Most observers, like myself, have come across a few in migration from time to time, chiefly in spring, when the birds' habits may be described in general terms as a combination of those of the Maryland yellow-throat and the Connecticut warbler. During the spring migration it frequents brushy hillsides and damp thickets, and in the nesting season seems partial to briar patches, in which it places its bulky nest of leaves and stalks.

The song is said to be rich and full and has been compared with that of the Maryland yellow-throat and the water-thrush.

MACGILLIVRAY WARBLER (Oporornis tolmiei)

Range: Breeds mainly in the lower Canadian and Transition Zones from central British Columbia, central Alberta, and southern Saskatchewan south to southern California, southern Arizona, and northern New Mexico, and from the Pacific coast to the eastern foothills of the Rocky Mountains and southwestern South Dakota; winters from Lower California to Colombia.

Though closely resembling the mourning warbler in appearance and representing that bird in the west, the Macgillivray warbler differs widely in habits. Thus it is far more generally distributed, both in the mountains and in the lowlands, and is much more numerous. In my own experience I have found it in summer chiefly in moist thickets of willows or other brush along streams, and a suitable locality is rarely without a pair or two. Other observers, however, have found the bird on dry brushy hillsides. This warbler nests from a few inches to a few feet above the ground. It has a short, though pleasing, song which is repeated at brief intervals.

HOODED WARBLER (Wilsonia citrina)

Range: Breeds in Carolinian and Austroriparian Zones from southeastern Nebraska, southern Iowa, southwestern Michigan, central New York, and the lower Connecticut Valley south to Louisiana, Alabama, and Georgia; winters from Vera Cruz and Yucatan to Panama.

While the hooded warbler has a wide range in eastern United States, its center of abundance is the lower Mississippi Valley. It is common only locally and wholly absent from many sections except as a casual migrant. Of the bird, one of our most beautiful warblers, Chapman says:

"To my mind there is no warbler to which that much misused word 'lovely' may be so aptly applied as to the present species. Its beauty of plumage, charm of voice, and gentleness of demeanor make it indeed not only a lovely, but a truly lovable bird. Doubtless, also, the nature of the hooded warbler's haunts increases its attractiveness not merely because these well-watered woodlands are in themselves inviting, but because they bring the bird down to our level. This creates a sense of companionship which we do not feel with the bird ranging high above us, and at the same time it permits us to see this exquisitely clad creature under most favorable conditions."

WILSON WARBLER (Wilsonia pusilla pusilla)

(For text, see page 314)

CANADA WARBLER (Wilsonia canadensis)

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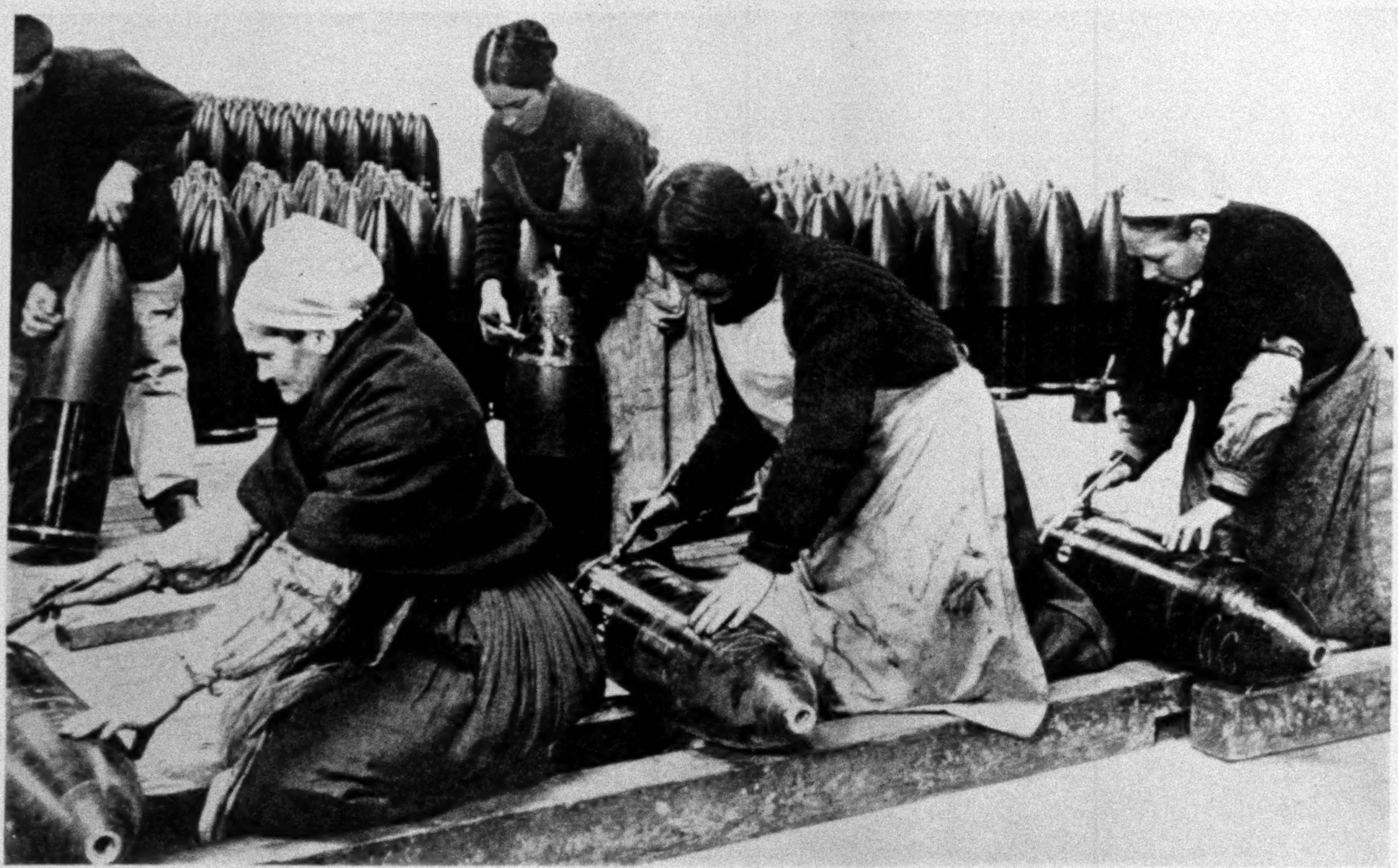

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MUNITIONS MANUFACTURING IS NO RESPECTER OF AGE

Many of the women of France who are doing their bit in the production of large-caliber shells for the big guns at the front have completed their allotted threescore years and ten, yet they gladly give the closing days of their lives "for France." In many cases their labor is all that they have left to give, for grandsons, sons, and husbands already have been sacrificed on the firing line.

THE BURDEN FRANCE HAS BORNE

By Granville Fortescue

FRANCE has taken war's foulest blows full on her breast. During the first two years of conflict German armies spread across her most productive provinces like a gray corroding acid, eating through farm, orchard, factory, home, destroying the most valuable property and most useful lives of the French nation.

But this scorification did not crush the spirit of France. Rather the enemy outrages — ruined cathedrals, ransacked homes, ravaged women — roused the French people to a terrible realization of the German threat against the world.

For the French man and woman, love of France, under the scourge of war, became a religion—a religion where fathers, mothers, sons, daughters, claimed the highest privilege accorded the Crusader and the ultimate sacrifice that gained the martyr's crown.

The battle which checked the greatest expression of organized savagery the world has seen in 3,000 years is often called the Miracle of the Marne. Surely it was a miracle. During three days lustful Uhlan outguards pointed their blood-stained lance tips at the Eiffel Tower, saying confidently, "Within the week and, our flag will float from the highest pinnacle in France." But the God who weaves the world's destiny in mystery heard the prayers of France. The miracle was performed. Paris, the most beautiful achievement of man on earth, was saved from sack and rapine.

INTERPRETING FRENCH PATRIOTISM

It is no easy task to try to interpret French patriotism to our home-staying Americans. Only sympathetic hands can inscribe the long, sad stories of sacrifice which mark the stations of the war in France. When one has lived in the sacred atmosphere of a people daily immolated on the altar of patriotism, one feels a certain unworthiness in sounding the depths of this feeling, of analyzing its springs, of calculating its results.

When the earth's last judgment is given on this great war, France will be deemed to have saved the world from despotism. Diplomats, during many years, have prophesied the contest between democracy and despotism for the domination of the world. In the struggle that endures France is the true champion of democracy, and no better expression of this democratic spirit exists than the French army.

When the French army is mentioned today, the French people is implied, for the whole nation is bound by the most sacred ties to the trials and triumphs of the fighting section of the populace.

THE IDEALS OF FRANCE

Contrasting the French with the German army, we discover, though both are grounded on conscription, they are radically different in their inspiration of service. The French and the German armies are completely separate in soul. History gives us the analogue of variance between the French and German military systems in the story of Greece and Rome. The Roman armies were organized for conquest, with the aim of spreading Roman "kultur" to the southernmost boundaries of Carthage and the northernmost villages of Gaul. The Roman eagle, like his Prussian descendant, sank his beak into the breast of the world. Roman power, like Prussian power, sprang from the will of the Emperor.

In Greece, in the age of Pericles, the demos was the fountain of power, and the army was the guardian of the freedom of the people. The ideals which inspired the Athenians, honor gained in serving the country, is today the ideal inspiring the soldiers of France.

In analyzing the spirit of the French soldier, bear in mind this vital fact—fighting is an emotional act; and it is admitted that an emotion springing from an ideal is necessarily finer than one founded on a person. The German goes to battle with the Kaiser's sparkling figure in the back of his mind, while the Frenchman fights for all that is connoted in the one word—France.

Frankly, the German honors, reveres, sanctifies war; the Frenchman hates, despises, abhors war. I have seen the soldiers of both nations in battle. I have studied them and talked with them after battle. I have watched for some unconscious expression that would give the clue to the real feelings of the French and German soldier, and when some phrase of the lips or flare of the eye marked the true state of the inward soul, I have noted it.

In countless ways the German shows it is the Kaiser he fights for; that dominant, disdainful figure symbolizes the Teutonic system, inspiring the German race to the ultimate sacrifice in the effort to spread that system over the face of the earth.

Never has the French soldier given any indication other than that he fights for his country, his cities, his farms, his homes. Never does he give way to the lust of battle for battle's sake. He sees in this war an evil, a scourge laying waste his beloved country, and he conceives it to be his duty to his forefathers, himself, and his children to rid the earth of this plague. The cultivated Frenchman will take pains to explain to you how illogical, unintelligent, uncivilized is war; yet you will see this same cultivated Frenchman wearing the uniform of his motherland racing like a fighting fury to the muzzles of the machine-guns.

THE TRUE HERO OF WAR

Will not the man who recognizes the brutal side of war, still does not hesitate to pay its penalty, merit more the title of hero than he who fights to gratify ambition?

The paradox of the French way of thinking about war and acting in war is carried out in the organization of the army. The wide, unbridgable chasm of caste which exists between the officer and the private in the German company is but the step of necessity in French battalions. French soldiers recognize the need for discipline, of the value of team-work, and the urgency of obeying in battle, as the very foundation of their worth as citizen soldiers. They know also that they of their own volition have created the authority behind the officer, and for this reason there can be nothing degrading in the surrender of personal privilege in the crisis of war.

Discipline is not maintained through fear, but by public opinion. Each private soldier recognizes that his individual efficiency and effectiveness, and consequently the efficiency and effectiveness of the whole French army, is based on his prompt and intelligent obedience of orders delivered by military superiors.

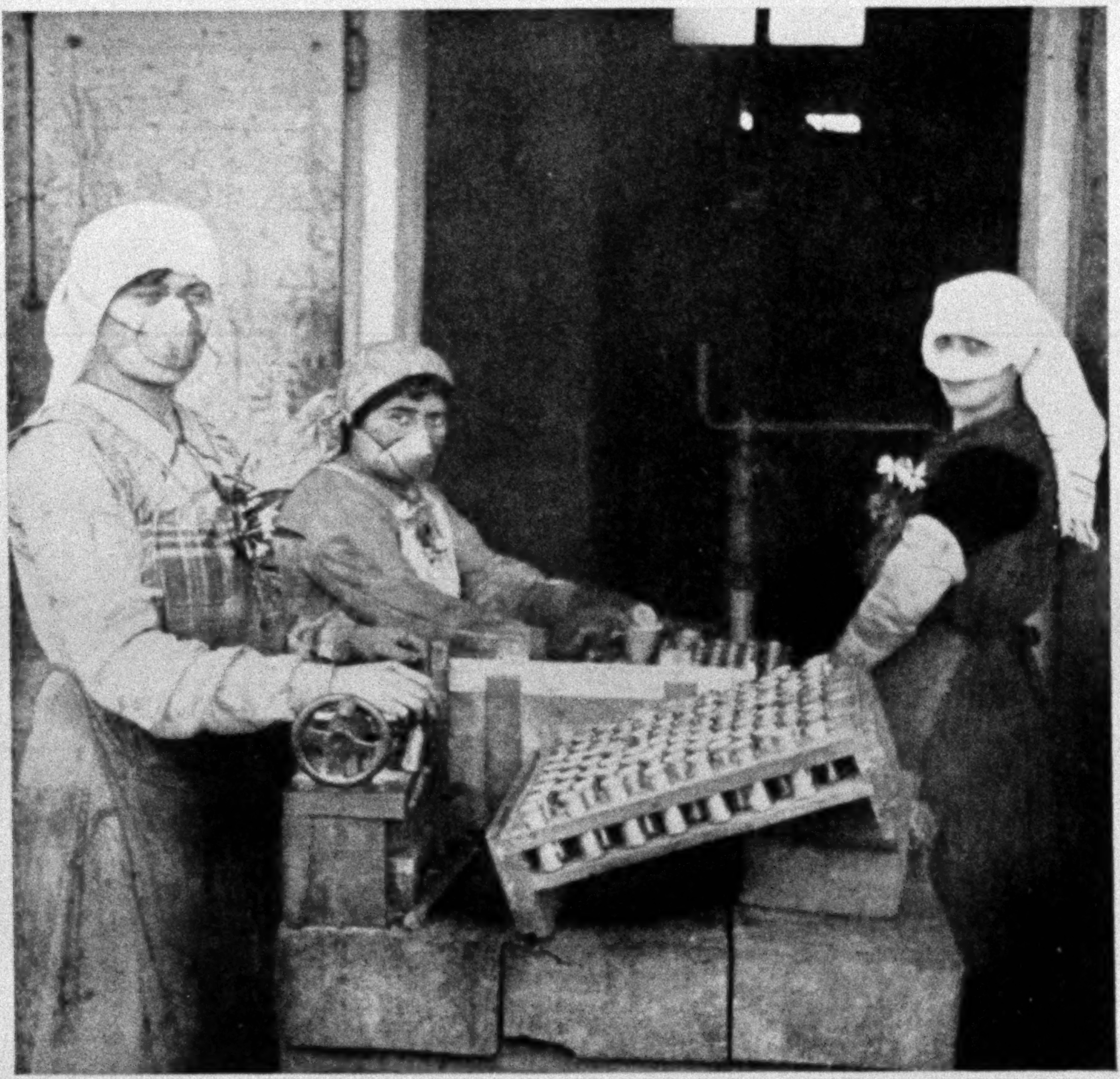
He knows that his officers are trained specialists in war, and he puts himself freely in their hands, so that the nation's will in war may be accomplished. He understands the successive limitations of military authority—the private to the sergeant, the sergeant to the lieutenant, the lieutenant to the captain, the captain to the major, and so on through grade after grade, up to General Nivelle, who in turn is responsible to France. With this conception of his duty, the most difficult part of military instruction is readily instilled into the French recruit.

HIGH STANDARDS OF PERFORMANCE

Thoroughly to appreciate the relations of officer to soldier in the French army, they must be seen together in the trenches. The captain watches over his men like a father. He shows a sympathetic understanding of their difficulties, while demanding in the common cause a rigorous adherence to their duties. The officer sets the highest standard of performance for himself and exacts the best each of his men can do.

But the soldier knows he can go to his officer with his private troubles and receive helpful advice. He knows he will never meet with intentional injustice. And what gives him supreme confidence is the knowledge that he will be led with intelligence and skill.

The French officer is constantly alert to take advantage of the enemy and safeguard his own men. The greatest crime



Photograph by American Press Association

WEARING GAS MASKS AT THE BENCHES

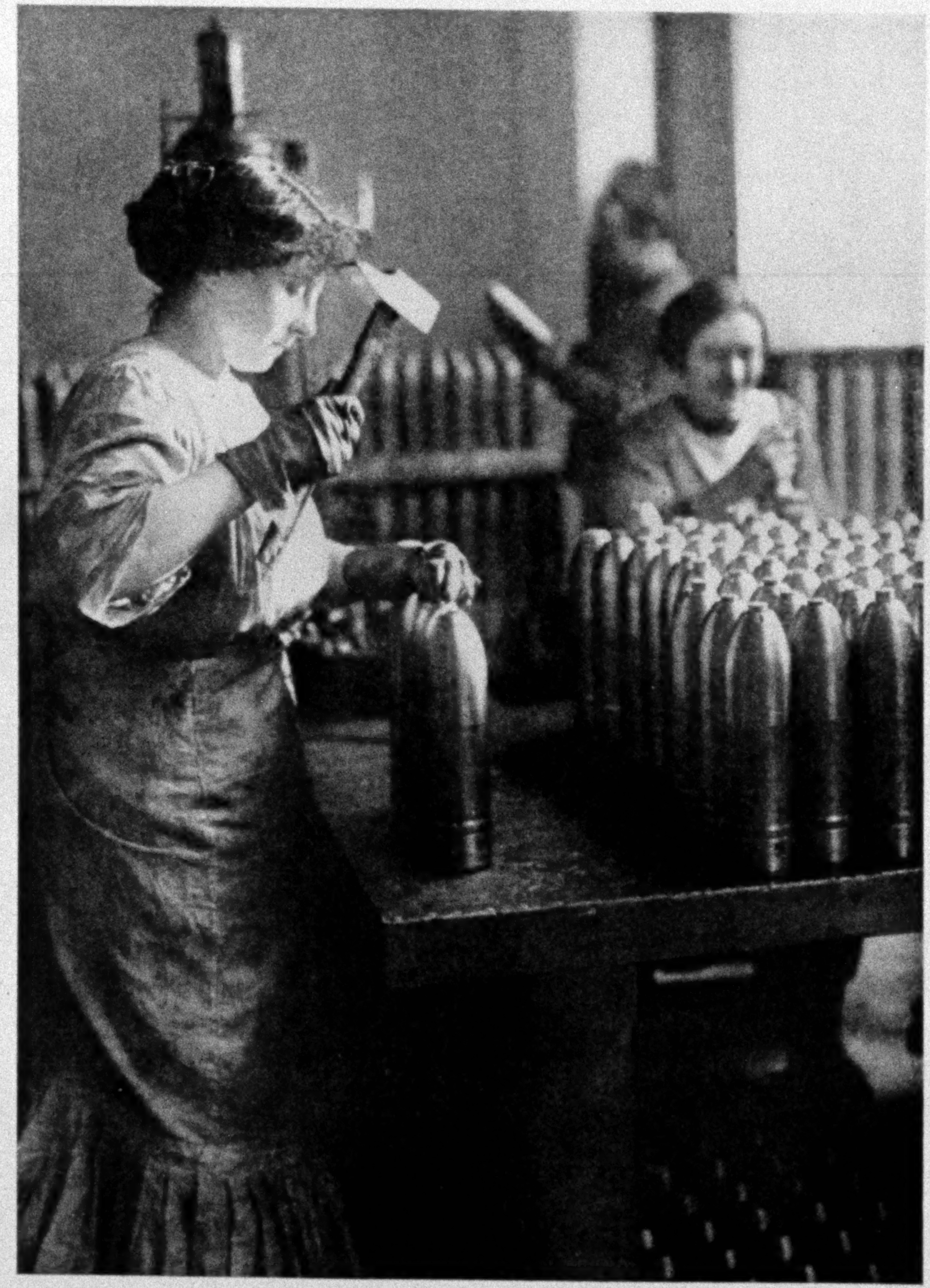
It is not alone in the trench that the soldier must guard against poisonous gas and dust. These women soldiers of the munitions plants must be similarly protected.

in the officer's calendar is wantonly to waste the life of a subordinate. Circumstances may call for the last sacrifice at times, but short of this condition the French commander husbands the lives of his men as a miser his pieces of gold. In an attack he will plan how they must creep from shell-hole to shell-hole, keeping as safe as possible from the enemy's artillery fire. He will study the ground in front of his trench for every available bit of cover, and so maneuver his men that they will gain its every advantage. He will elaborate trench and sap until his men are as safe as the battle front permits, feeling his duty to his country demands not only that he defeat the enemy, but that he defeat him with the minimum expenditure of the lives under his command.

Men learn quickly to appreciate this quality in their officers, and this appreciation brings about a sense of loyalty which closely knits an army into an unbeatable whole.

THE TEST OF THE TRENCHES

The test of the trenches also brings out the indomitable spirit of France as could no other circumstance. I saw this spirit in its concrete cheerfulness during a visit to the battle line beyond the Somme.



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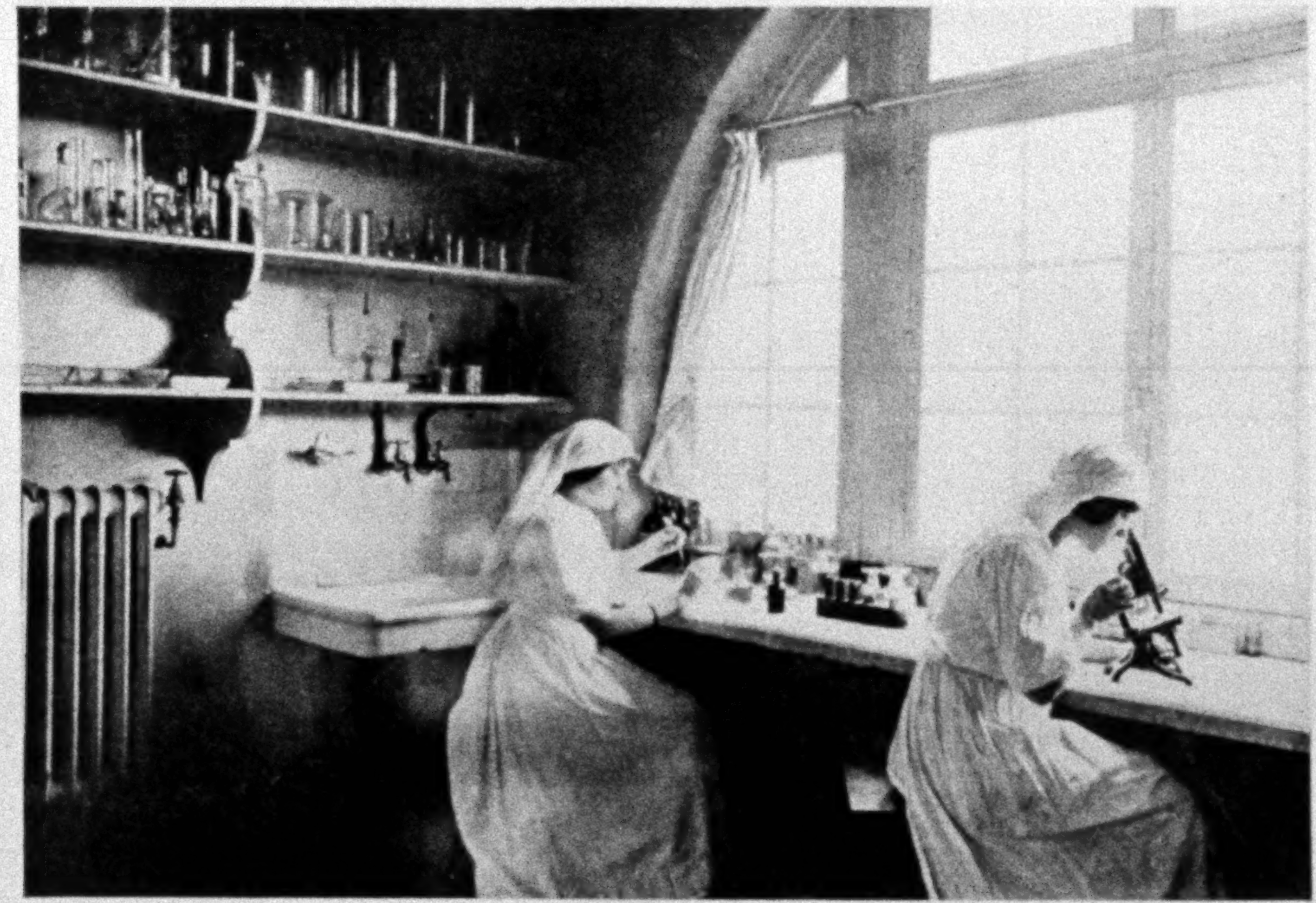
FRENCH WOMEN WORKING IN AMMUNITION FACTORIES

Mythology relates that Jupiter, as a reward for the excellence of the thunderbolts forged by his crippled son, Vulcan, bestowed upon him the hand of the fairest of the immortals—Venus. The daughters of France have inherited their beauty from the Cytherean goddess and their skill in making modern thunderbolts of battle from the Olympian blacksmith.



Photograph by Paul Thompson

WOMEN ENGAGED IN RESEARCH WORK FOR THE BENEFIT OF FRENCH SOLDIERS

This war has given women their opportunity, which they have not been slow to seize upon; but in no sphere of usefulness has this been more pronounced than in Red Cross work. Here nurses are seen engaged in research work to benefit the particular cases they have in hand.

It had rained for two weeks and it still rained. The battle ground, a great patch of black, desolate earth, looked as if for an age it had been submerged beneath the slimy waters of some flood. Gaunt and murky tree stumps marked the residue of woodlands. A thousand shell pits pocked the ground. Into these drained the top soil of the earth in flux.

The Germans kept up a sullen shelling of the French trenches, zigzagging across these fields of desolation. Depression hung like a lowering cloud over the scene. Yet as I passed along the communication trenches I heard a voice in blithe song issuing from the depths of a dug-out. A sodden rain was falling, adding the last dismal touch to conditions, yet the singer chanted gaily:

"Elle a perdu son parapluie, tant pis pour elle."

In a moment a mud-spattered soldier appeared from the dark of the cave.

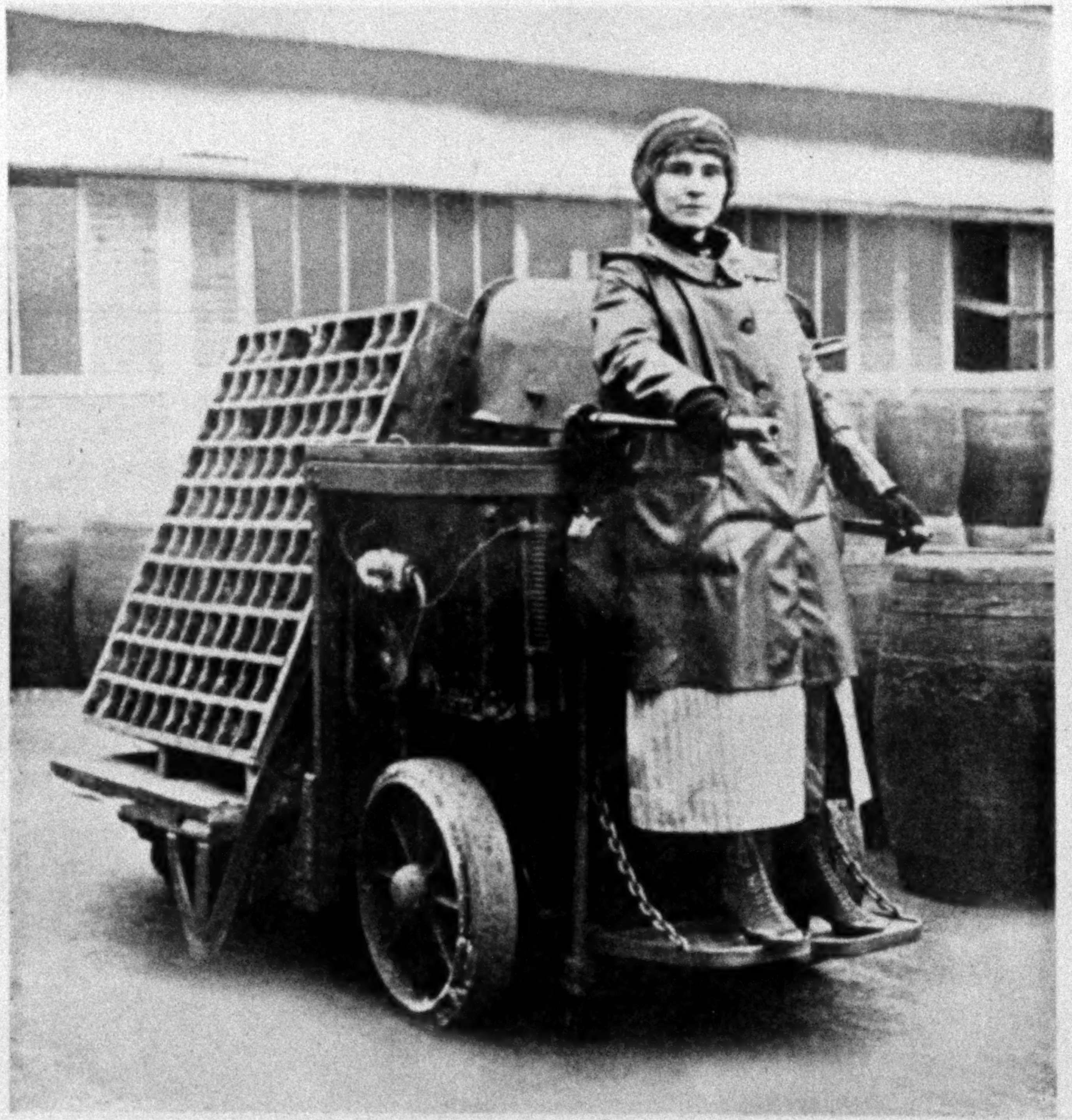
"Good morning," he said, cheerily throwing the carcasses of two huge rats over the parapet. "There goes the night hunting."

The cheerfulness of this soldier personified the spirit of France.

WAR'S AWFUL COST TO FRANCE

In the proportion to her population, France has given more of her citizens to battle than any other nation. It would be valuable information to the enemy to give the exact figures of losses, so the French general staff publishes no record of the cost of victory. But from a study of such data as is available an estimate can be made. Counting the dead, the permanently disabled, and the prisoners, France's contribution to the holocaust of war is more than two millions.

The price France pays in flesh and blood is a greater sacrifice than has been yet demanded from any of the allied nations. In computing the value of this sacrifice, all the conditions of French population must be taken into account. Chief among these must be placed the ab-



Photograph by American Press Association

THE FAIR CHAUFFEUSE OF A SHELL SEDAN

This is the type of electric cart used in the munitions factories for the transportation of shells. It requires a steady hand and a sure eye to pilot this machine when it is laden with a cargo of canned death.

normally low annual increase in the number of French citizens. Taking only the figures for native-born Americans during the last forty years, and the increase in population in the United States has been over thirty millions, while during the same period in France the increase has been less than three millions.

If the loss continues at the same rate, in another year France will lose the total surplus in citizens she has gained since the war of 1870. And it must be remembered that the death lists today are not compiled from the aged and sickly, but from the youth and health of the land.

Through the sacrifices in men lost during the early battles of the war France was able to check the German rush and gain time for England to prepare. The French army met the German army at its full strength and defeated it. The victory of the Marne was due to the tactics employed and the blows struck by the French army. When the facts are finally revealed, history will grant France this honor. But it is an honor paid for in the best blood of the country.

Up to the present it has been the French army, the French citizen soldier, who has saved the world from German conquest.

A SPARTAN MOTHER AND WIFE

As an example of what France gives, let me quote the story of General Castleneau. He is a valiant, generous gentleman—a soldier with the soul of a Spartan.

He and his sons were among the first to draw their sabers in defense of their land. During the first year of the war, when he was pressed down with the cares of one of the most important commands in the French army, news was brought to General Castleneau, first, that one of his sons had been killed; then in a few months a second died for his country.

The third son fought in the army commanded by his father. He was his father's favorite. Little more than a boy, in the first battles he had shown a courage that won him honor and rapid promotion. Then in one of those attacks, where regiment upon regiment charged through the fields of death, this third son was mortally wounded.

Upon the death of this boy, broken by his sorrows and the strain of war, General Castleneau thought to give up his high command and live out his last days on his home farm. Then his wife came to him. He told her his thought.

"No," said this French wife and mother, "you have given the best of yourself to your country. You have nothing left to give save these last years. We must keep up the fight." General Castleneau today is still at his post of duty.

RESOURCEFUL FRANCE MEETS NEW CONDITIONS

Not only has France given the bodies of her sons in the sacrifice of battle, but she has also given the fruits of their brains. The trained professional officers of the French army have been the intelligence which directed the military operations of the Entente armies. These officers were instructors in the art of war to the allied forces, and while acting in this capacity they evolved new tactics which so effectively thwarted German ambitions.

The new tactics were the outcome of trench warfare, which had brought into use weapons long since discarded in modern armies. When the war opened French battalions, a thousand strong, had the organization common to most armies, namely, four companies and a mitrailleuse section of two guns. The men were armed wholly with rifle and bayonet; but French ingenuity was quick to see the changes of organization and armament made necessary by the new warfare.

Today half the battalion have discarded the rifle and carry grenades or one-man machine-guns. Three of the original companies are still infantry, while the fourth has been changed to a machine-gun company with eight mitrailleuses.

The infantry companies are subdivided into sections and armed with special weapons: first, the hand-grenade throwers; second, the rifle grenade soldiers, who, instead of throwing the grenade, fire it from their guns; third, the soldiers firing automatic rifles, and these are followed by the ordinary infantry, using rifle or bayonet.

The machine-guns as employed by the Germans were the great bugbear of the trenches. These weapons would mow down a whole company of advancing soldiers in the charge. French officers set themselves to solving this problem and devised the small cannon to be used in the assault. The gun, 1½-inch caliber rapid fire, was dragged forward with the charging line. When brought into action it soon mastered the fire of any hidden machine-gun.

THE WORK OF THE RIFLE GRENADE

That ingenious weapon, the rifle grenade, merits special citation. It consists of an iron receptacle, clamped to the end of the regular rifle, in which a special type of grenade is placed, and the rifle fired. The explosion sends the grenade about 200 yards through the air, while the rifle bullet, piercing the center of the bomb, sets free the fulminate, which causes the grenade to explode on landing.

I have no intention of going into a

technical discussion of the French infantry in attack, and only give the outline of tactical changes in order to indicate how the French people are fighting with their intellects. They have no belief in brute force in war; if they had, they long ago would have surrendered to the Germans. Their faith is pinned to their own finesse—a finesse which exasperates and thwarts the enemy.

As instructors, French officers have been of inestimable value to the English. In the beginning of the war the British army was deficient in artillery—a deficiency which was rapidly remedied in material, for England turned out guns for the army from the naval-gun foundries. But gunners, who are soldier specialists, were not available for the batteries.

In this dilemma England turned to France, the country that had developed the finest corps of artillerists the world has ever seen. French officers were detailed to the English batteries, and English officers also were taken into French artillery units and learned their art in the actual practice of war under the tutelage of the most competent teachers.

I have referred to French artillerists as the finest in the world. The statement is made without qualification; and were I seeking the factor of greatest single importance in the military strength of France, I should decide upon the artillery.

A HUMAN MACHINE IN ACTION

It was given me to see the French guns go into action in one of the early attacks of the war—the engagement at Dinant. Aside from its spectacular interest, the performance was one of the most perfect exhibitions of artillery technique I have ever witnessed. The guns were driven, wheeled, and unlimbered with the precision of parade-ground maneuvers. The men dropped into their appointed places like the parts of a geared machine. Then guns were loaded, aimed, fired, reloaded, without an ounce of lost motion. When the projectiles exploded, and I could see the effect through my binoculars, I wanted to cheer for the gunners of France. They had scored four direct hits.

The guns of this battery were the "soixante quinze" caliber, since become the most famous cannon of the war.

The construction of this cannon was a jealously guarded military secret up until the time of the opening of hostilities. Other nations knew that France possessed a field gun of exceptional properties, and while they had hints of its effectiveness, as demonstrated in peace, it needed the brutal test of war to prove the superiority of this weapon above all similar makes of artillery.

It is readily understood that, with a cannon which shoots farther and faster than the enemy, the French army possessed an asset of great military advantage.

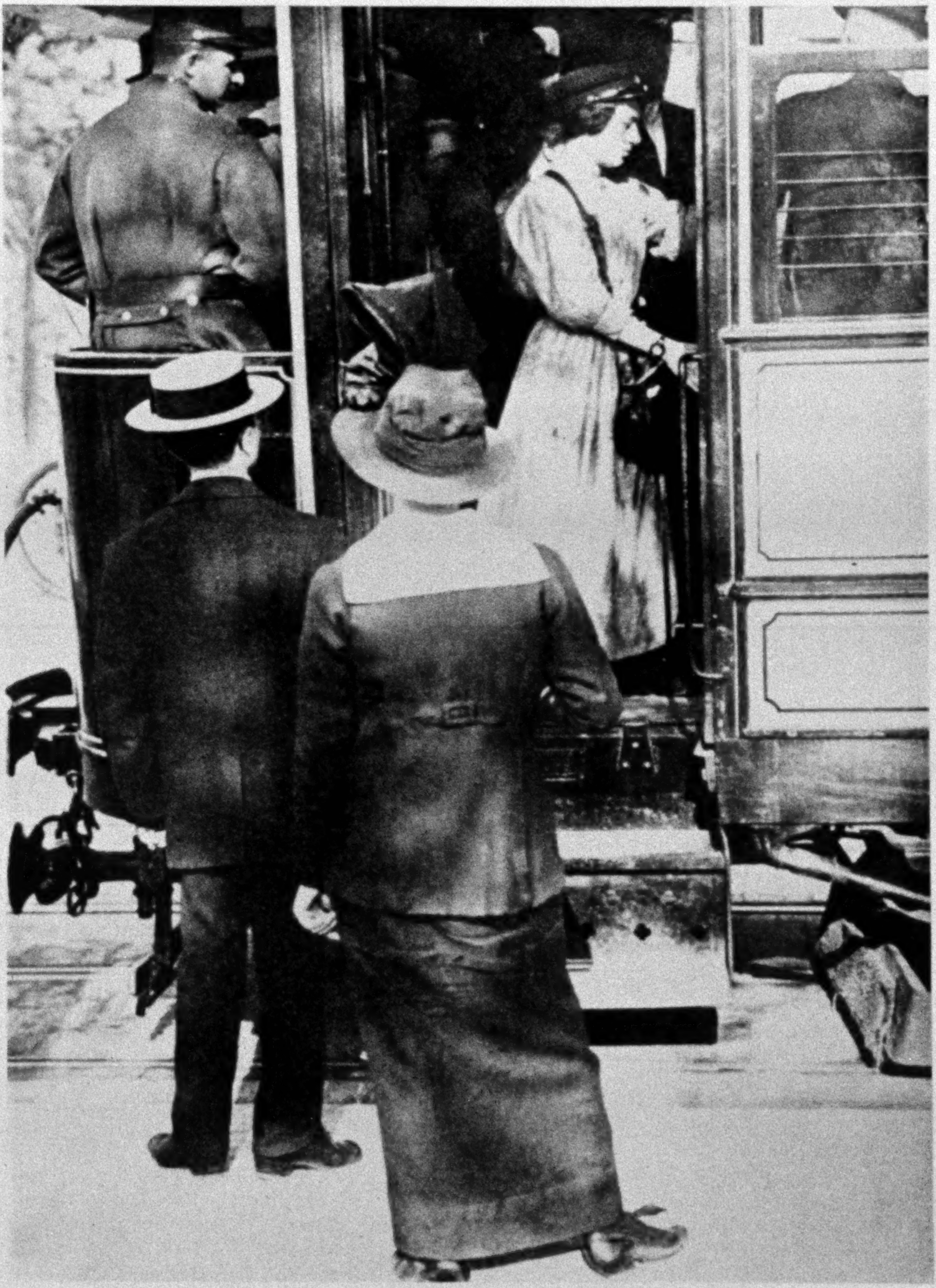
I have heard French artillerymen state that the superiority of their "soixante quinze" batteries made up for the German preponderance of numbers in the beginning of the war, and that the destructiveness of these guns was so great that they almost equalized the tactical value of the forces of France and Germany after several hours of actual fighting.

The gun is a marvel of fitted mechanism; breech-block, recoil cylinders, sighting apparatus, all the puzzling pieces of hardened steel which open and close the cartridge chamber, function with the smoothness of a dynamo.

In the process of loading and firing, it gives the impression of some sentient organism rather than a machine of turned steel. This impression is heightened by the short, dry sound of the explosion when the shell is fired—a sound that awes and electrifies when first heard, and which has come to be far more characteristic of battle than the conventional "boom" supposed to convey the noise of cannon.

GERMANY BEATEN AT THE ARTILLERY GAME

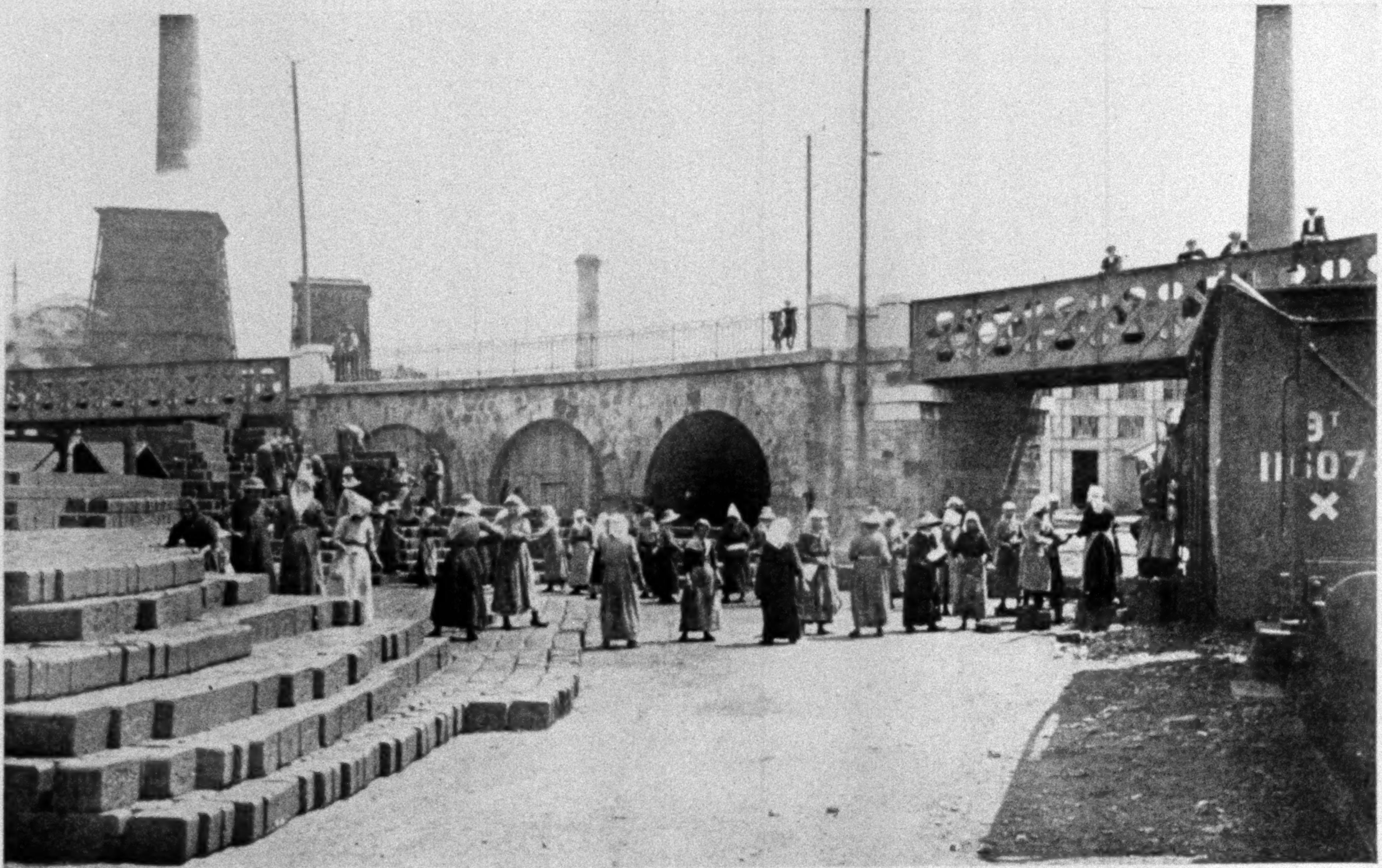
As soon as the superiority of the French cannon was recognized, the great arms factories of France were enlarged and worked to the limit of capacity, not only to furnish new guns for the French army, but also to supply the enormous demands of the Russian army. Later Serbia and Roumania were also supplied with field batteries from French foundries, and in these countries officers and men accom-



Photograph by Paul Thompson

FARES TO THE FAIR

Among the many occupations which the women of France are pursuing, in order that men may be released for service in the army, are those connected with the street railway systems of Paris and other cities. Motorwomen, girl conductors, ticket sellers, and ticket takers are now the rule rather than the exception. Here a young girl is seen wearing the uniform cap of a surface-car conductor. From her shoulders hangs the big leather bag in which she deposits the passengers' sous and centimes.



Photograph by Paul Thompson

WOMEN IN THE COAL MINES OF GARD, A DEPARTMENT OF SOUTHERN FRANCE

It has been due to the unremitting toil of such service armies as this that the fuel shortage in the north of France has not been even more serious than it now is. "If he slackens or fails, armies and statesmen are helpless," said President Wilson in his appeal to the American miner. This has been no less true in France, and the women miners have courageously assumed the vast responsibility. The blocks on the left are "briquettes" of coal.

BORDEAUX-BEGLES: GENERAL WAREHOUSES OF THE HEALTH SERVICE

Like her chief munitions works at Le Creusot, France finds it expedient to keep her principal stores of surgical cottons and health-service supplies far removed from the immediate scenes of hostility. Not only are these warehouses beyond the zone of possible airplane raids, but, being at Bordeaux, they are convenient depots for the receipt of Red Cross shipments from England and America.

panied the guns to insure efficient handling.

From the above it is seen how generously France came to the support of her allies in the most important branch of military science; and when we reflect on the enormous amount of material destroyed during the two and one-half years of war, we begin to perceive what a drain this has been on the resources of France.

Reliance upon the decisive effect of artillery in battle has been a tradition with the French army since the victories of the first Napoleon. He it was who originally employed artillery in a massed formation. At Wagram, at Lutzen, at Hanau, this maneuver of concentrated artillery fire gave the victory to the armies of France. Napoleon III tried to continue the theories of his brilliant ancestor, but failed; yet the influence of the great master of tactics continued; so it is but natural that the use of artillery in war should reach its highest perfection through French development.

The French have relied for success in the fighting today on the ancient maneuver of the Napoleonic era—a mass of guns firing at a given point in the enemy line. At the same time they endeavored to make the practice of concentrated fire more effective through increased speed and accuracy of fire.

THE BIG GUN VS. THE LIGHTER ONE

Before the opening of the great war there were two schools of artillery tactics—the French, which believed in the above theory of rapid field-gun shelling, and the German, which pinned its faith to the effectiveness of huge guns having a greater range than the ordinary field gun and of course throwing a far more destructive exploding charge. The extreme of the German theory was the widely advertised 42-centimeter cannon, supposed to be able to reduce the strong-

Photograph from Paul Thompson

BOUND FOR PARIS

A French Red Cross train bearing sick and wounded soldiers to Paris after passing through a field hospital. One of the nurses is making a tour of the train, distributing coffee to the slightly wounded and sick men.

est fortress to ruin with three well-directed shots.

The actual practice of war and the peculiarities of trench fighting developed the fact that neither of these schools was wholly right. The light French guns were ineffective against troops hidden in well-constructed trenches, while the difficulties of transportation involved in moving the giant German guns from point to point outbalanced their ultimate effectiveness.

French artillery experts began at once to experiment toward developing the most serviceable gun under actual conditions of war, and the result of this experiment can be gauged by the different caliber of cannon now used in the French army. Here is the list given in meters and the approximate caliber in inches:

First the 75 millimeter, the standard field gun, 3-inch caliber; the 95 millimeter, 3½ inch; 305 millimeter, 12 inch; 370 millimeter, 15 inch; 400 millimeter, 16 inch, and last the largest cannon in the world, 520 millimeter, or 20 inches.

I give the list in full to impress upon my reader the extraordinary complication of industry involved in the casting, turning, and assembling of these various types of cannon. Special machinery must be employed in each instance where there is a variation in caliber. Complete foundries are given over to the manufacture of the separate parts of the gun and gun carriage. The industrial organization for one size of gun alone is greater today than the total pre-war ordnance organization.

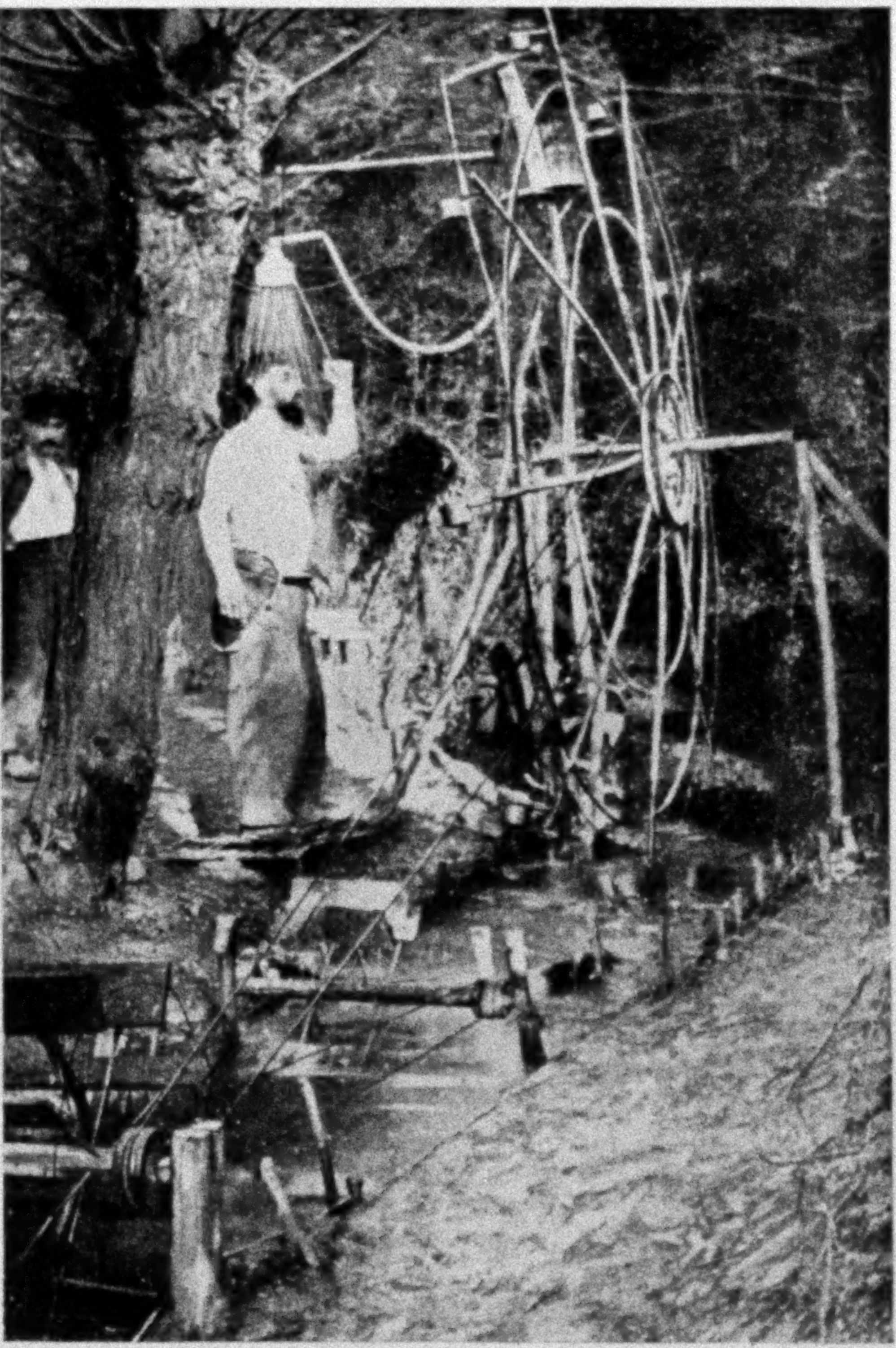
THE 20-INCH CANNON OF FRANCE

From the failures of the Germans the French found that the problem of heavy artillery in the field was transportation; so French artillery experts began at once to try to solve this difficulty. They have succeeded in their task. Their triumph is the construction of a railroad truck upon which is mounted a 20-inch cannon, the heaviest piece of artillery in the world.

The marvelous manner in which the French have overcome the mechanical difficulties that hitherto confined heavy artillery to fortress or siege operations is a striking example of what French brains are doing in this war. Firing a 12-inch gun from a foundation built along a spur of railway was considered a mechanical impossibility before General Joffre's expert artillerists demonstrated the success of the idea.

It was not only in the construction of these guns that France showed her skill, but in their operation. French gunners first developed indirect fire—the art of hitting an unseen target—and in this war they have brought indirect fire to technical perfection and even applied its principles in new ways.

Undoubtedly, in accounts of present-day battles in Europe, the reader has met the phrase curtain or barrage fire. He may have guessed something of the nature of this artillery expedient.



THE SHOWER BATH

Judging by this contraption, the French soldier has developed a modicum of Yankee ingenuity. A water-wheel motor operates a hydraulic lift, which supplies a bucket reservoir with the "makings" of a sprinkle. The apparatus works, but it looks as if it might have been modeled after a comic cartoonist's distorted dream.

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Photograph by Paul Thompson

ISSUING A FOOD TICKET TO TOMMY ATKINS

The offices of the Gare du Nord, Paris, have been converted to the uses of organizations for the relief of suffering among the refugees and victims of the war. A British soldier is seen accepting an order for a meal.

The phrase means, in untechnical language, the art of aiming a mass of cannon in a manner that the projectiles from all of them fall in a given area in such a shower as to form a curtain or barrage of exploding iron.

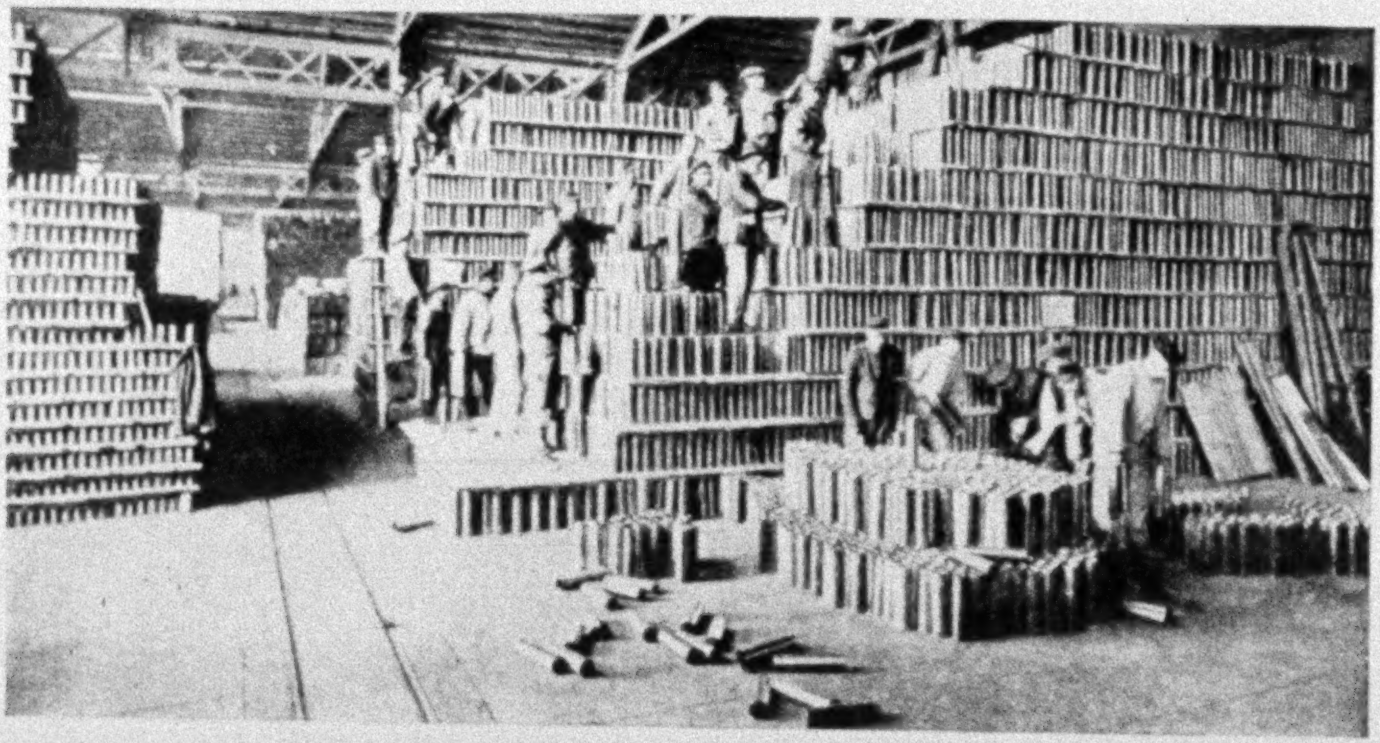
This curtain may be dropped behind an enemy position so that reinforcements cannot come to his aid when attacked, or it may be used to check an advance.

THE SYNCHRONIZED FIRE OF 400 GUNS

Accurately to synchronize the action of 50 or 100 batteries, 200 or 400 guns, so that while firing from widely separated positions at a target that is not in view the projectiles arrive simultaneously along a defined and predetermined line, is a matter of the highest technical skill and calculation. To the French belongs the honor of first employing this effective artillery principle.

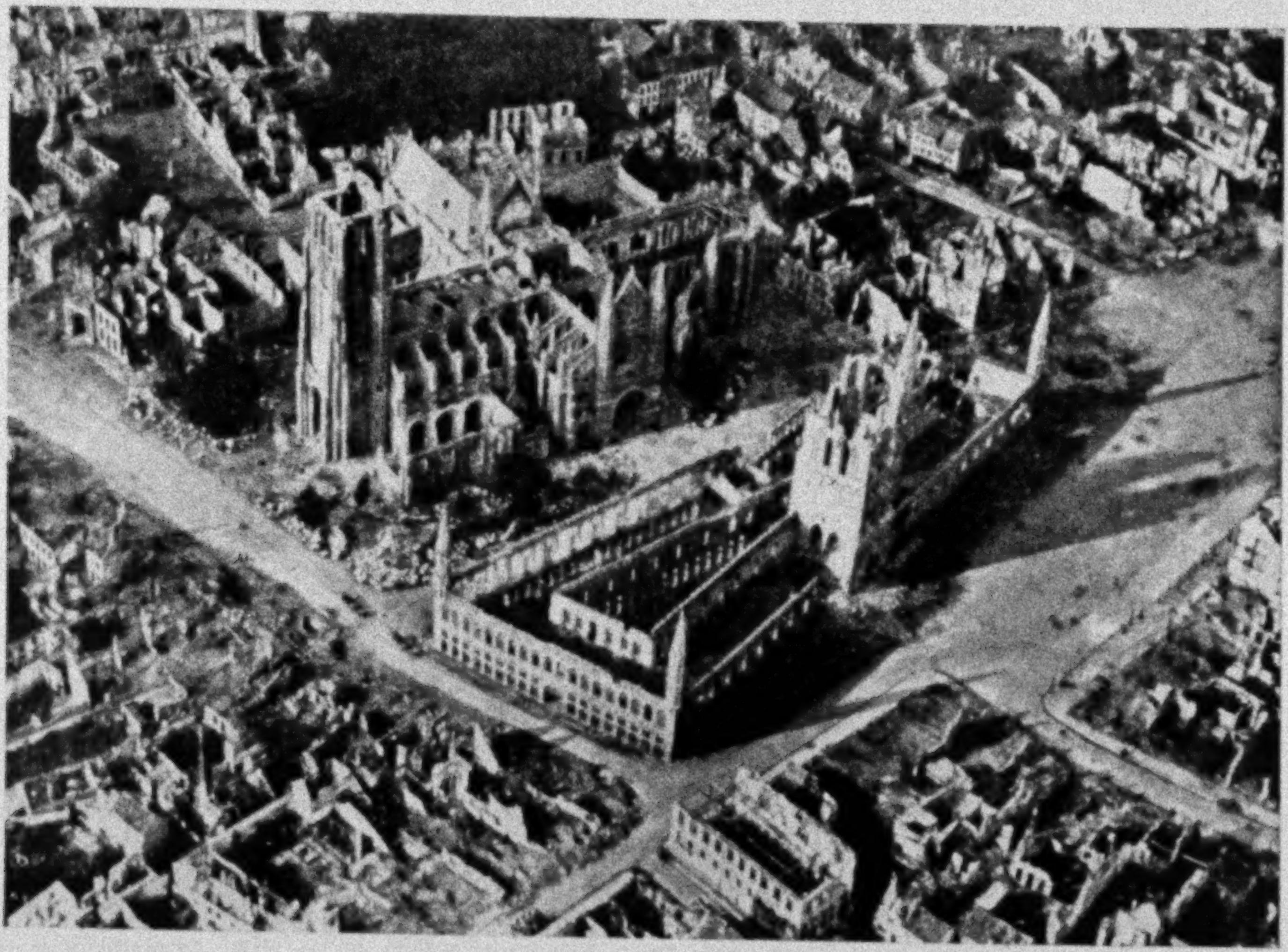
I have seen these great pieces of ordnance, equal in size to the major guns of a battleship, moving from point to point along specially built lines of lateral railroads, running in rear of the trench position on the Somme. At the will of the commander they are brought into action wherever the press of battle warrants.

This development and operation of artillery is the most impressive manifestation of the colossal expansion of modern war. Consider the tons of metal molded into each of these great cannon, and then reflect that wherever the trucks upon



PILING UP SHELL CASES FOR 75-MILLIMETER GUNS

"The French 'soixante-quinze' gun is a marvel of fitted mechanism. In the process of loading and firing it gives the impression of some sentient organism rather than a machine of turned steel. This impression is heightened by the short, dry sound of the explosion when the shell is fired—a sound that awes and electrifies."



VIEW OF YPRES: PHOTOGRAPH TAKEN FROM A FLYING MACHINE

The pitiful ghost of one of ravaged Belgium's most beautiful and historic cities. In the central foreground may be seen the roofless remains of the famous Cloth Hall, the largest edifice of its kind in the kingdom, begun by Count Baldwin IX of Flanders in the year 1200. Just beyond looms the scarred and desecrated Cathedral of St. Martin. On all sides are ruin and desolation, where three summers ago dwelt nearly 20,000 happy, thrifty people, engaged chiefly in the peaceful pursuit of making Valenciennes lace.

RESERVES CROSSING A RIVER ON THE WAY TO VERDUN

"They shall not pass" is a phrase which for all time will be associated with the heroic defense of Verdun. To future generations of French people it will bring a thrill of pride even surpassing that enkindled by the glorious "The Old Guard dies, it never surrenders." The guardians of the great fortress on the Meuse have proved themselves invincible in attack, invulnerable in defense.

which they are mounted move, bridges, culverts, even the road-bed itself, of the railroad line must be strengthened to support the load.

Further, in order that the giant cannon shall have the mobility for effective use, new sections of railroad must be built whenever the army advances.

If you analyze the process of manufacture and the details of transportation involved in the creating and bringing of each one of the new heavy field guns to the front, you arrive at an understanding of the important part played in the war by the French industrial organizations.

A WONDERFUL PRODUCTION OF SHELLS

I was witness to another phase of the effectiveness of this organization, as shown in the munition industry in France. Taking the number of units produced daily as a standard, the greatest single business of the war is the making of shells. This comes about through the enormous disproportion in the time consumed in the production and the distribution of shells compared with the time needed to expend them.

Consider the making and the breaking of the shell. One is a tedious, toilsome, exacting, and complicated process, beginning with the digging of iron ore from the earth, its transportation to steel mills, its transfusion and casting into ingots.

These ingots are the raw material of the shell casing only. The production of the explosive that serves as the bursting charge is an industry in itself, while the construction of the mechanism of the fuses requires almost as much skill as watch-making.

In the first year of the war, the critical period of the conflict, France led all the Entente nations in the production of shells. As was the case with guns, France had to supply her ally, Russia, with the munitions so necessary to the effectiveness of the armies fighting in Poland and

Photograph by Paul Thompson

A WAGON-LOAD OF HELMETS OR CASQUES FOR FRENCH SOLDIERS LEAVING THE FACTORY

At the outbreak of the world war the French fighting man wore a long-visored, tall-crowned cap, but this picturesque headgear soon yielded to the utility of the metal headpiece, which furnishes a certain degree of protection from the shrapnel that bursts above the trenches and sows the seeds of destruction in the furrows of death.

the Carpathians. To meet this drain the industries of the country were reorganized. The products of peace gave way before the demands of war.

The concrete example of this is the transformation of the plants of the Renault automobile works to the making of munitions. In one factory, formerly wholly concerned with the forging and fitting of motor machinery, 15,000 men and 4,000 women are now employed 24 hours of each day grinding and filling high-explosive shells. The work, divided into shifts, never halts, and from this one plant 11,000 projectiles are daily sent forward to the front.

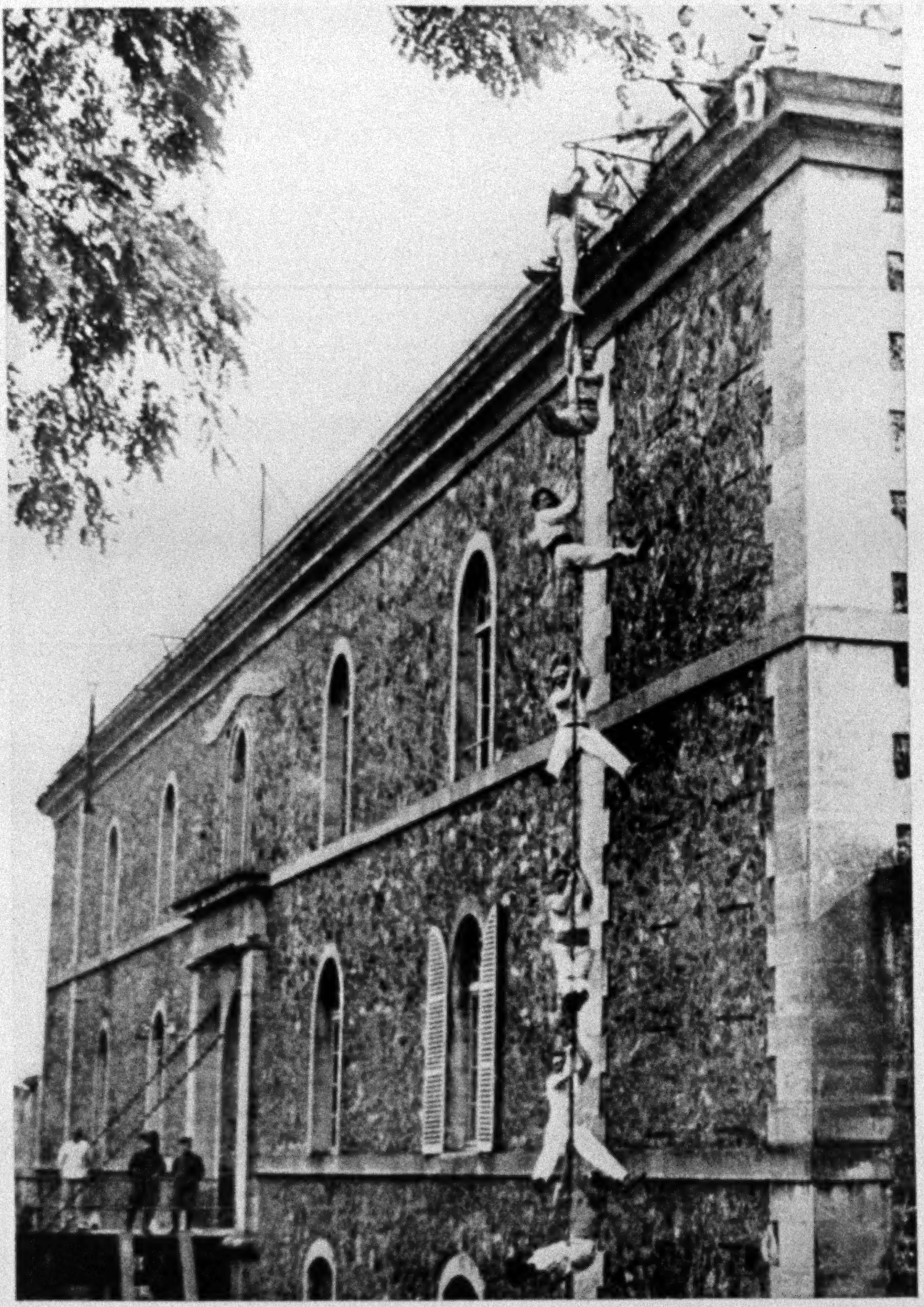
THE VASTNESS OF THE EXPENDITURE OF STEEL

But during periods of heavy fighting, when the cannon is playing its important part in the tragedy of battle, the calculated average expenditure of ammunition by one army corps is 29,000 shells per day. So the total effort of 19,000 workers employed during 24 hours furnishes somewhat more than one-third the ammunition used by a small part of the army.

The number of army corps holding the front in France is a military secret, and as the United States is now ranged on the side of France in the war, it would be injudicious to try and probe that secret. We violate no confidence when we state that it is more than thirty. This figure will give us a basis for calculating the number of shells produced by the munitions factories of France.

There are long periods when the expenditure of ammunition in no way approximates the figures given above, and it is during these periods when the guns are comparatively silent that production catches up with consumption.

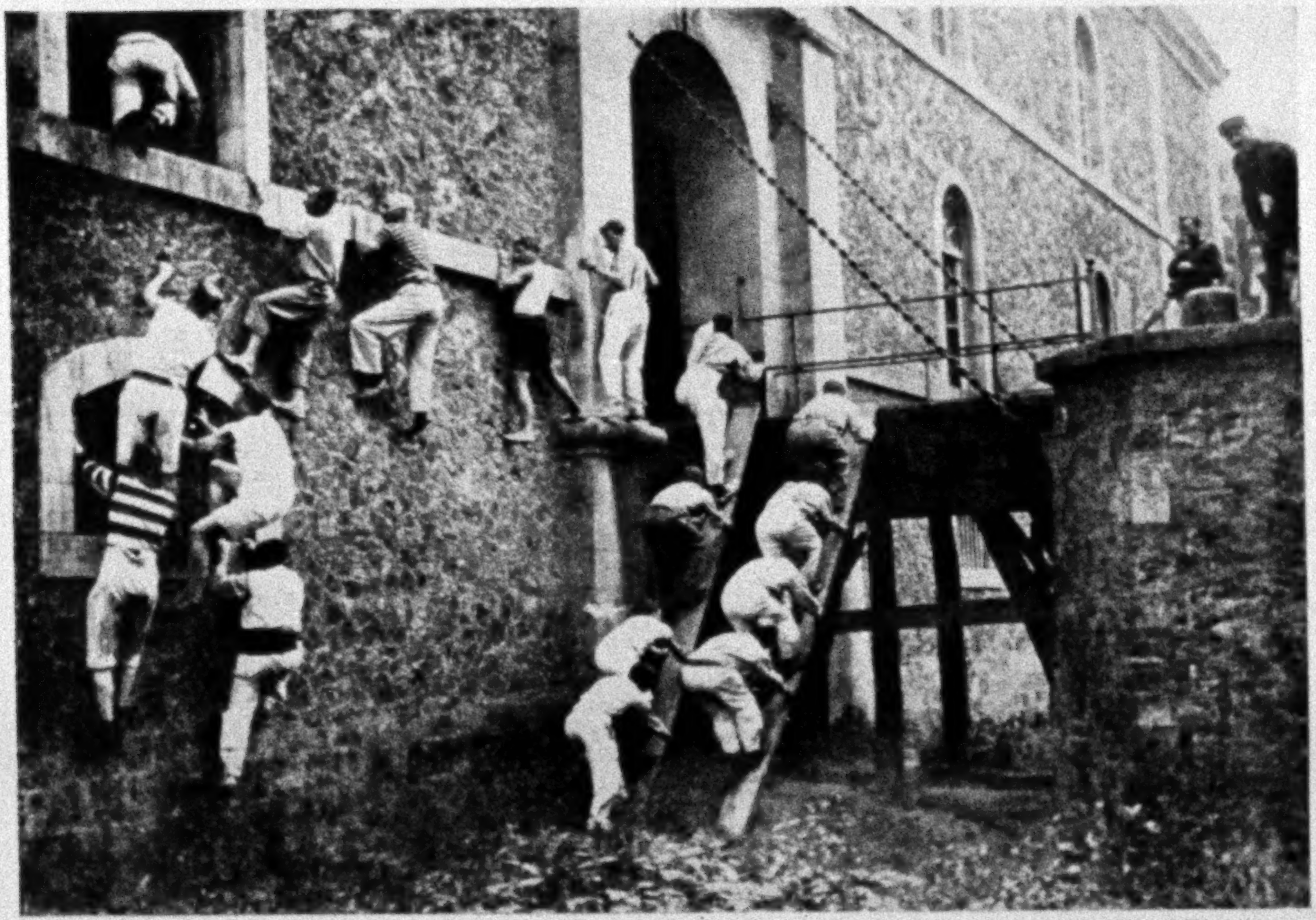
It may be true that England is grad-



Photograph by Paul Thompson

HEAVY TRAINING FOR FRENCH SOLDIERS

The making of men taken from civilian life into well-trained soldiers has been a problem in England as in France. Business hours left the Frenchman with little time for exercise. Their training in the manner here shown quickly made them fit, and soon after leaving the counter, lathe, or desk they have proved themselves able to undertake with endurance the long marches and successful offensives against the common enemy with complete success. Every Frenchman entering the army undergoes a preparation in gymnastics as here shown, where men of the new armies are being made fit at the Physical Training School near Vincennes.



Photograph by Paul Thompson

HOW TO TAKE A BUILDING BY STORM ; A LESSON AT THE PHYSICAL TRAINING SCHOOL OF VINCENNES

Although there have been innumerable new engines of destruction employed in the present world war, such as the submarine, the airplane, and the high-explosive shell, the fighting forces of Europe have also hied back to ancient and medieval principles of warfare with astonishing frequency. For example, we have seen the recrudescence of the "Greek fire" idea in "liquid fire," the evolution of the Chinese stinkpot in the new poisonous gas, the reappearance of the armored knight in the soldier wearing a steel helmet, and the glorification of the battering ram in the lumbering new "tank." As shown in the above illustration, the modern soldier is trained to scale walls, just as were the soldiers of Darius the Great, Alexander the Great, Alfred the Great, and Charlemagne. There are variations, but no new principles, in the crude art of destroying human life.

ually approaching France, both in the manufacture of heavy guns and the production of munitions; but this condition appears after two and a half years of war. During those two and a half years it was the French cannon, French shells, French soldiers, and Franch brains that checked the military ambitions of Germany.

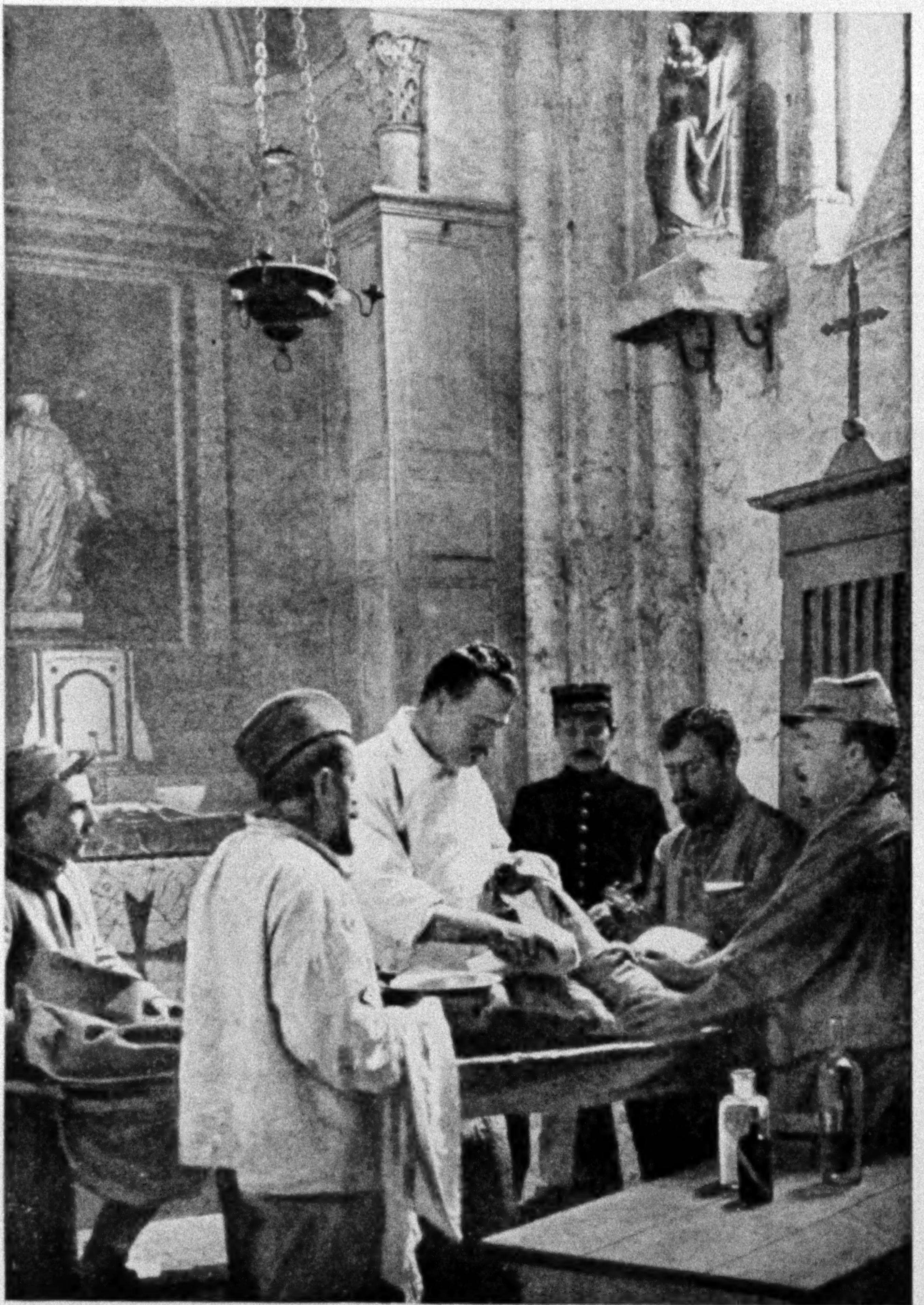
NEW MIRACLES OF SURGERY

With all this effort applied to improve her killing power, France did not neglect the complement of war destruction—healing. The best surgical and medical minds of the country pondered long on the problem of saving all that was possible from the human wreckage of war.

The fruit of this thought is exemplified in the work of Doctor Carrel, whose achievements under the Rockefeller Foundation are well known in the United States, and Doctor Dakin.

These two men put all their efforts into curing the evil of infection. They had found in their work among the wounded that 75 per cent of deaths, after the first 24 hours, were due to infection; that 80 per cent of amputations were due to infection, and that 95 per cent of secondary hemorrhage came through infection.

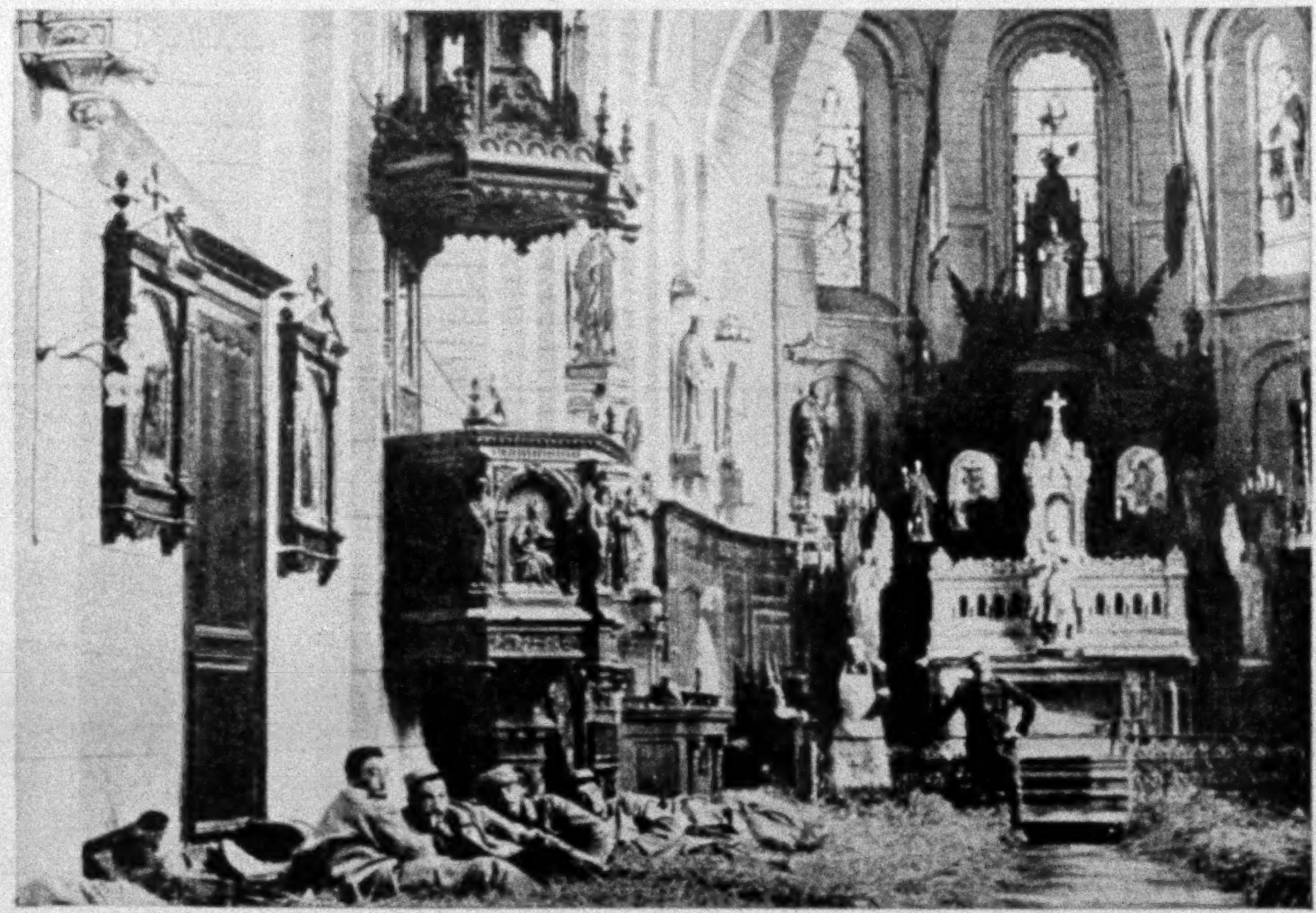
While the work incidental to healing the wounded was going on, Doctors Carrel and Dakin established a research laboratory in conjunction with their military hospital at Compeigne.



A CHURCH CONVERTED INTO AN EMERGENCY HOSPITAL: THE OPERATING TABLE

"With so much of its skill and thought applied to the development and perfection of her killing power, France has not neglected the complement of war destruction—healing. The best surgical and medical minds of the country have wrestled with and mastered the problem of saving all that is possible from the human wreckage of modern battle."

XUM



HOSPITAL UNPREPAREDNESS: AN OBJECT-LESSON FOR AMERICA

In the early days of the war, before the French Red Cross had fully organized its resources, it frequently happened that straw strewn upon marble flags was the only makeshift for beds which could be provided for the wounded. This straw proved most unfortunate for the wounded, as it was often infected with tetanus germs. Here, beneath the altar of their faith, in the Church of Aubigny, converted into a hospital, the fighting men of France reconsecrated their lives to the cause.

It is not necessary to give the details of the experiments of these two scientists. Today, by the application of the Carrel-Dakin method of sterilizing wounds, one amputation is performed where formerly twenty were necessary, and where there were ten deaths one now occurs, and the time of convalescence is reduced from three to six months to four or, at the most, six weeks.

It has been found that the method of Doctor Carrel applied to the formula of Doctor Dakin has not only shortened convalescence, but in consequence reduced the strain on doctors and nurses and the cost of hospital maintenance; also it has minimized pain. But more than all this, it has resulted in a great saving of limbs and lives to France.

THE HEROISM OF THE FRENCH WOMEN

Turning from the purely military side of war to the economic side, we find another picture of French sacrifice. In this picture the French woman holds the foreground.

In the time of war every physically fit male in France can be called upon to shoulder rifle and fight the battles of his country. When this call sounds, it might be thought that the agricultural and industrial structure of the nation would be reduced to chaos.

But for the sturdy heroism of the women of France such might have been the case. When the men were called to the colors, the women came forward to fill the gaps in the farming and manufacturing armies.

French women, aided by their children, plowed the fields, sowed the seed, harvested the crops that during two years have fed the soldiers of France. French women tended the vines, gathered the grapes, and pressed the wine which France exports throughout the world.

French women became conductors, motor operators, ticket-sellers on the subways of Paris; they took the positions vacated by men in the post-office department; they were employed in the street-cleaning and other municipal departments.

In all industries, public or private, women replaced the men called to the front, and, what is much more to the point, they made good in their new work.

UNREMITTING TOIL FOR A FREE FRANCE

As farmers, as vintners, as laborers, as munition workers, French women toil without ceasing to save France and take some of the burden of war from the shoulders of the men. In their own field, as housewives who understand the importance of thrift, they have saved the economic situation.

The enormous financial burden which war has so unjustly thrown on France has been lightened by the thousand economies put into practice by French women in their homes. All the little dainties of table, the little coquetries of dress, the little temptations of amusement, have been sternly put aside for the duration of the war.

Sugar means money spent abroad; therefore the French woman gives up pastries, sweets, and reduces the amount of sugar used in the household. Coal is needed to keep the munition factories up to the maximum of production, so the French woman reduces the amount of gas and electricity used in her home, as these are the products of coal.

Thus French women, through practicing direct and indirect economies, actually reduce the cost of the war to France; and, more than this, when any money is saved to them from these economies they invest the saving in government war loan, making every copper do double work in the defense of the country.

In this article I have outlined what France has done in the war. I have mentioned the work of the army which met and turned the heaviest blows the military power of Germany could muster. I have mentioned how the artillery, the product of French brains, bulwarked the efforts of the soldiers. I have referred to the work of the women of France and their splendid stand under the strain of war, and I have mentioned the spirit of France.

AN UNCONQUERABLE SPIRIT

In conclusion, I must again allude to that spirit. French men and women know that the resources of their nation in property and lives are being consumed in the furnace of war. They know what the death of their soldiers means to the nation in the future. They realize the terrible consequences of German occupation. Yet in the face of all these bitter trials the people have never faltered.

Throughout the misery, the suffering, the brutal injustice of this war, France has fought valiantly for one ideal—the ideal upon which that nation and our own is founded—the right of the citizen to liberty.

Each day as the French armies press the enemy back from the territory so long occupied, the sacrifices of France are proved with greater poignancy.

The band of blackened land now given over to desolation is the visual testimony of what the war has meant to France. But it is not only the losses of today, but what those losses mean in the future, that must be reckoned as part of the burden France bears. This is a sacrifice no man can gauge.

When democracy rises triumphant from the struggle with despotism, and when the last page of war history is written, the world will gladly acknowledge its debt to France.

THE CALL TO THE COLORS

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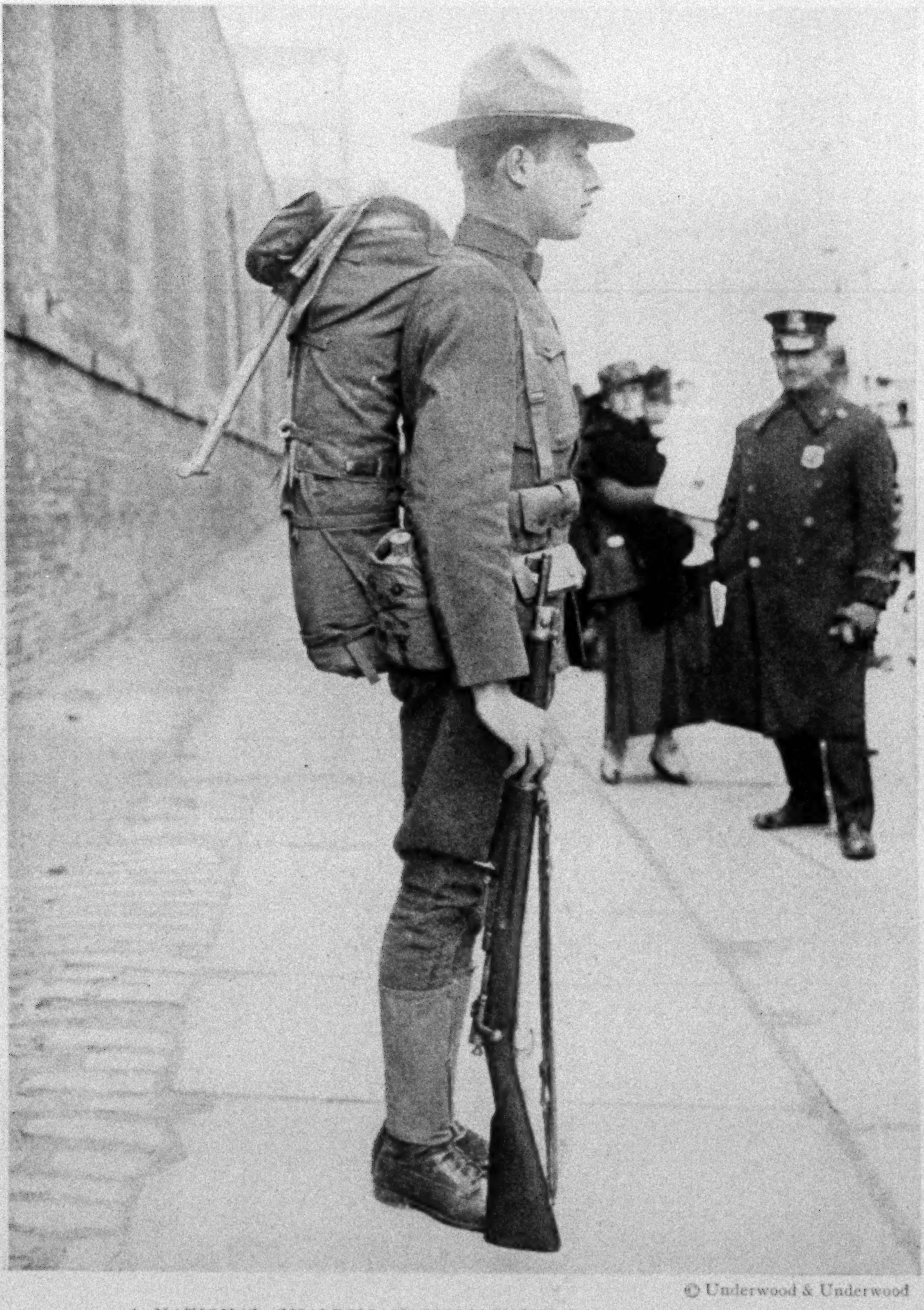
500 NEWLY MADE BLUEJACKETS OF THE U. S. NAVY READY FOR ACTIVE SERVICE

Having completed the necessary course of instruction at the Naval Training Station, Newport, R. I., these youths, bearing their white canvas bags, which in the navy take the place of "wardrobe trunks," stand on the threshold of the great adventure—war—with honor and sacrifice for country as the two great prizes. The Newport Naval Training Station is to the bluejacket what West Point is to American army officers and Annapolis is to the future admirals of our fleets. Here he receives instruction in the essentials of seamanship. At the present time all the pupils at this school are undergoing intensive training to fit them for the immediate needs of the hour.

© American Press Association

A NAVAL MILITIA BUGLER SOUNDING A CALL "TO THE COLORS"

In twenty million American homes fathers and sons are waiting for this call, and when the summons comes there will be no shirking of responsibility. Mothers, wives, and daughters also will hear this challenge, and with hearts steeled to sacrifice will bravely bid farewell to those who go to battle for America and humanity.



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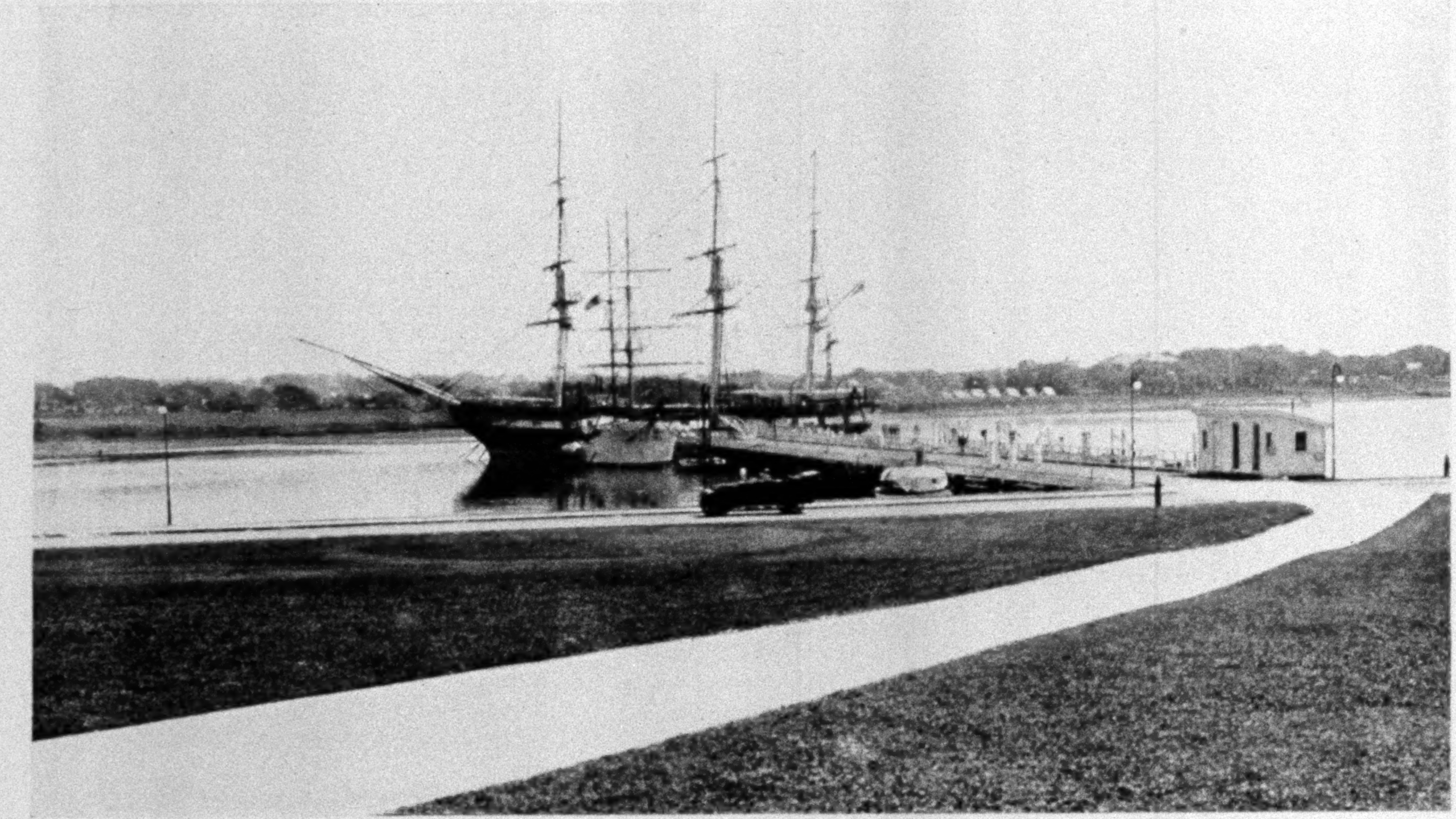
A NATIONAL GUARDSMAN COMPLETELY EQUIPPED FOR SERVICE

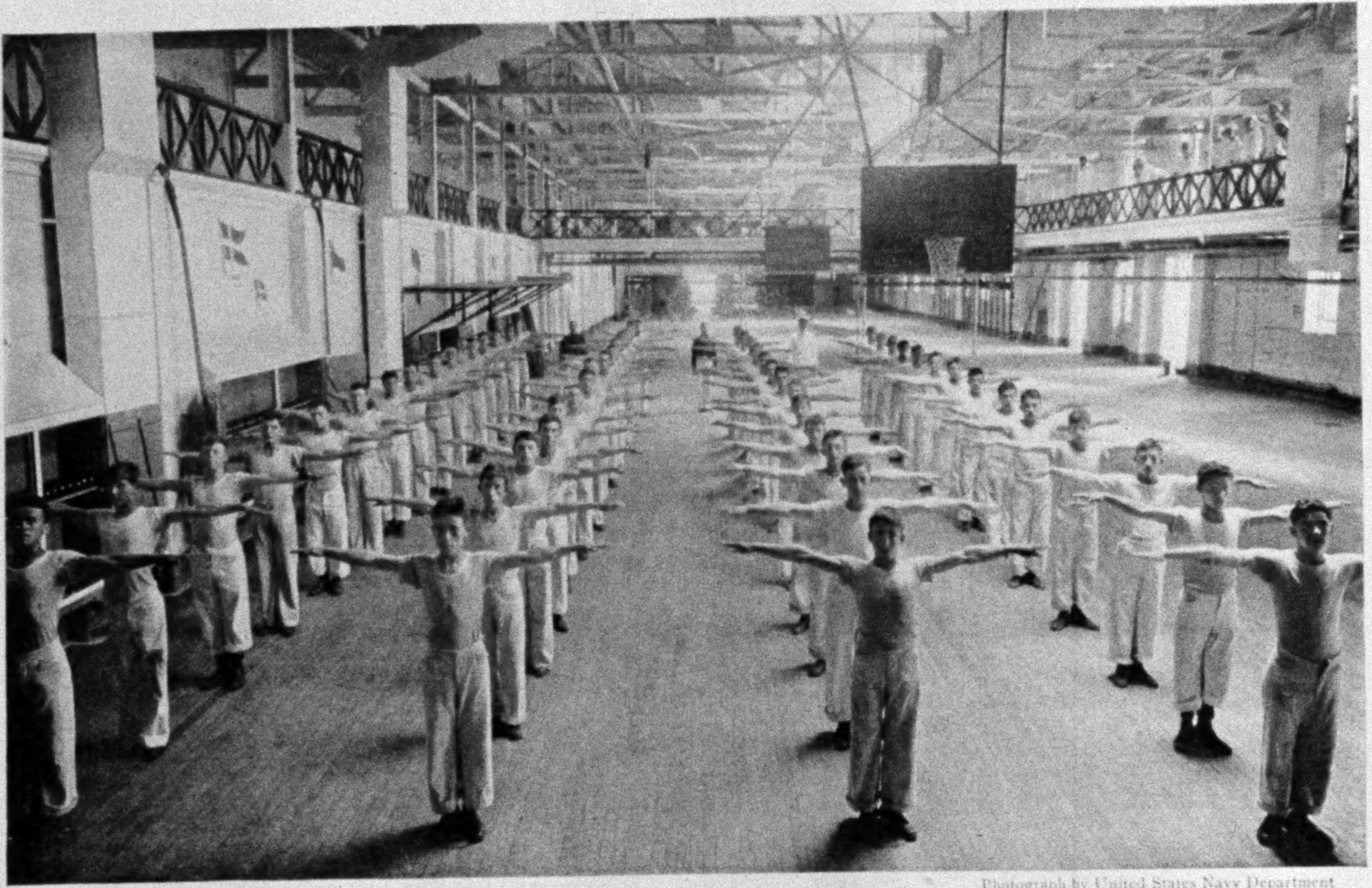
On his back this American fighting man carries his blanket roll, small shovel, bag, etc. His canteen is at his belt. He is armed with a .30 caliber U. S. Army rifle. Minimum weight for maximum efficiency is the principle upon which his whole outfit has been designed.



Photograph by United States Navy Department

U. S. S. "CONSTELLATION" MOORED TO A WHARF: NEWPORT, R. I.

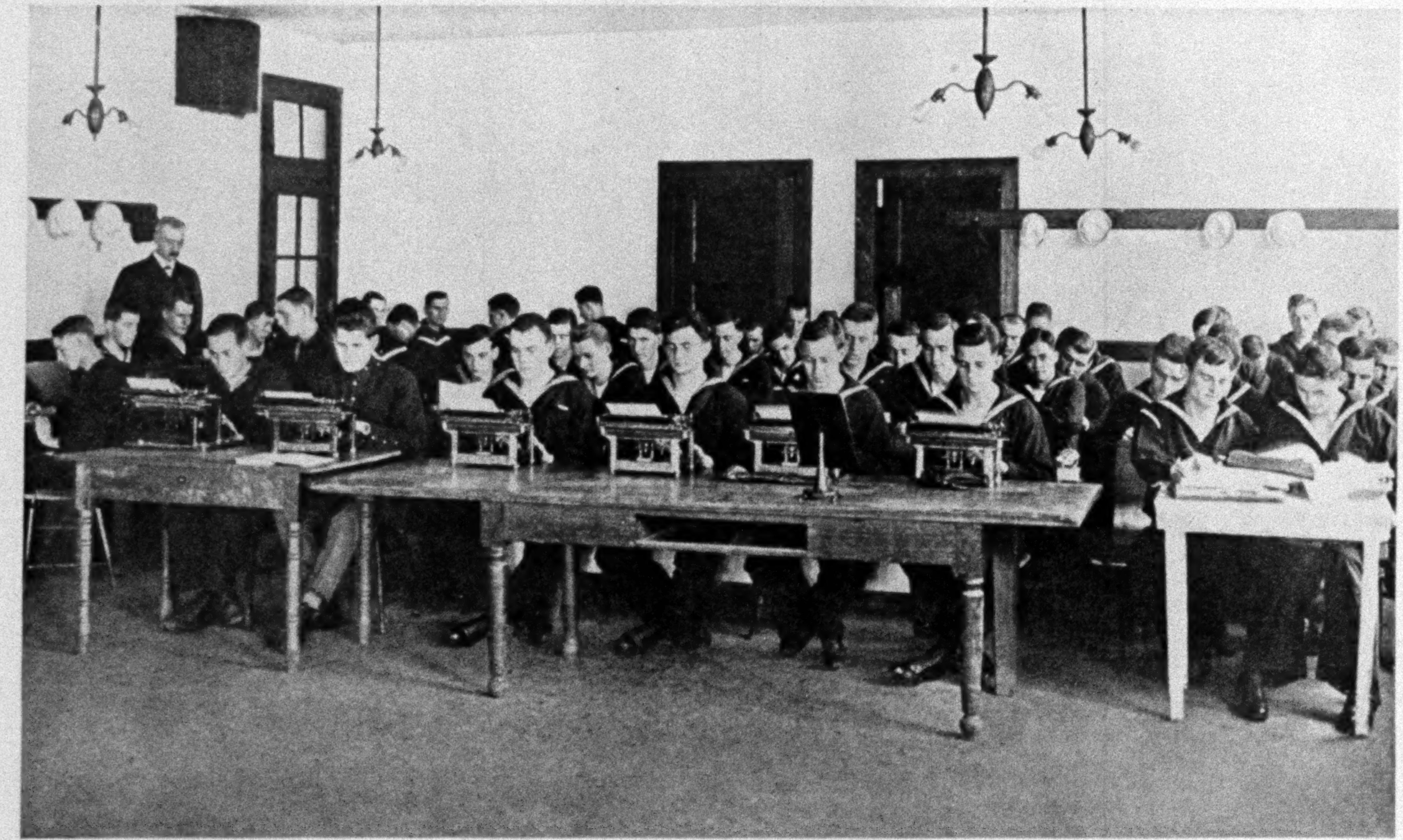
Born into the American Navy in 1798, the same year which marked the advent of the more famous *Constitution*, this stalwart fighting craft, flagship of Commodore Thomas Truxton, carried the Stars and Stripes to victory in two of the most brilliant naval engagements in the history of our nation. Like *Old Ironsides*, the *Constellation* is preserved as a shrine at which bluejackets and marines become imbued with the spirit which animated American seamen in the early days of the Republic.



Photograph by United States Navy Department

GYMNASIUM INSTRUCTION IN THE NAVAL TRAINING STATION: NEWPORT, R. I.

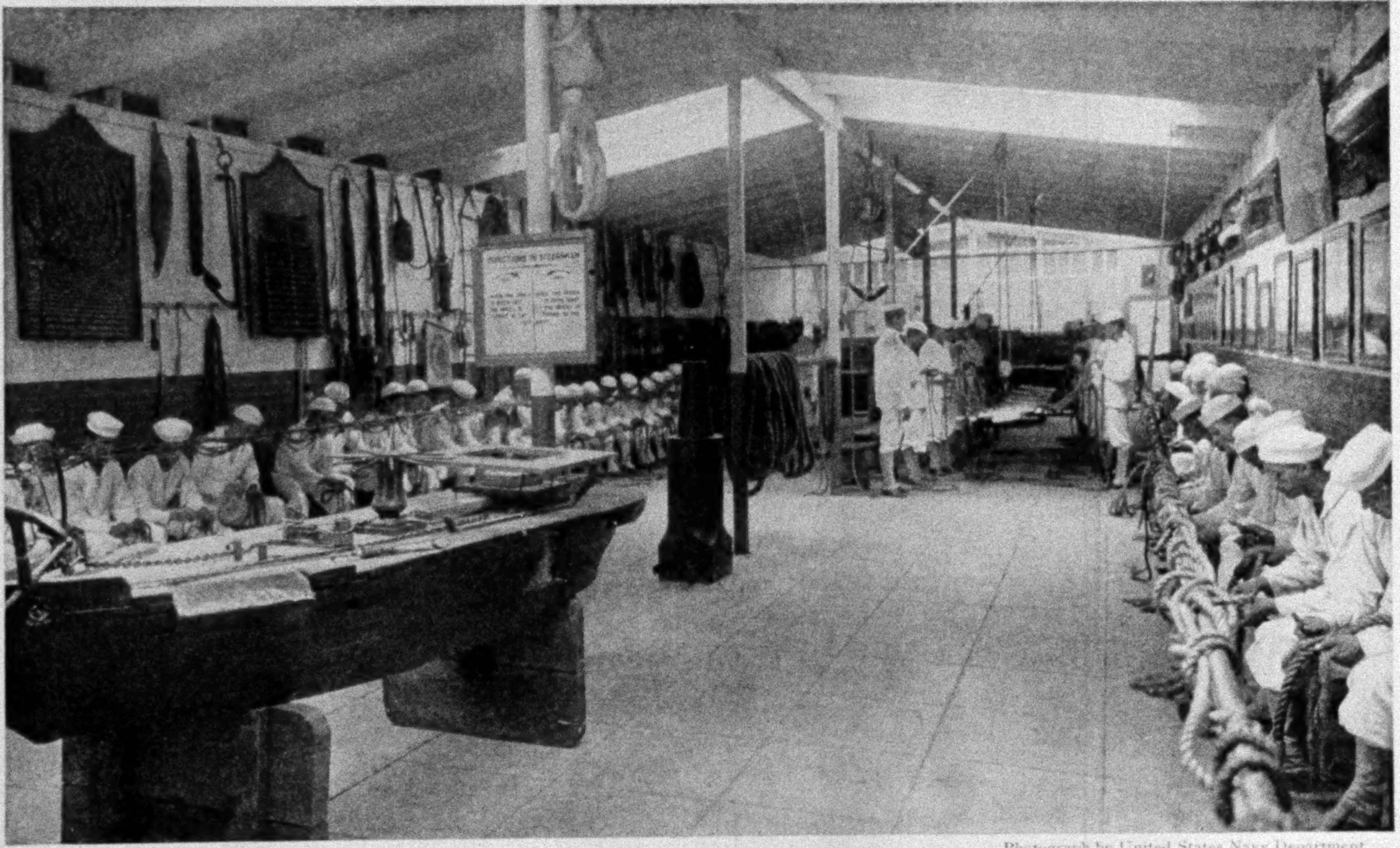
Upon the sturdy strength of these youthful shoulders the United States will rely confidently in the death struggle with the sinister German submarines; and no American doubts the courage or the stamina of these about-to-be fighting men of a navy which has never yet known inglorious defeat.



Photograph by United States Navy Department

YEOMEN'S SCHOOL, NAVAL TRAINING STATION: NEWPORT, R. I.

In order to perform efficiently and expeditiously the clerical work on board a modern warship, yeomen must be proficient in stenography and typewriting; hence this group of young enlisted men resembling a class in a business college



Photograph by United States Navy Department

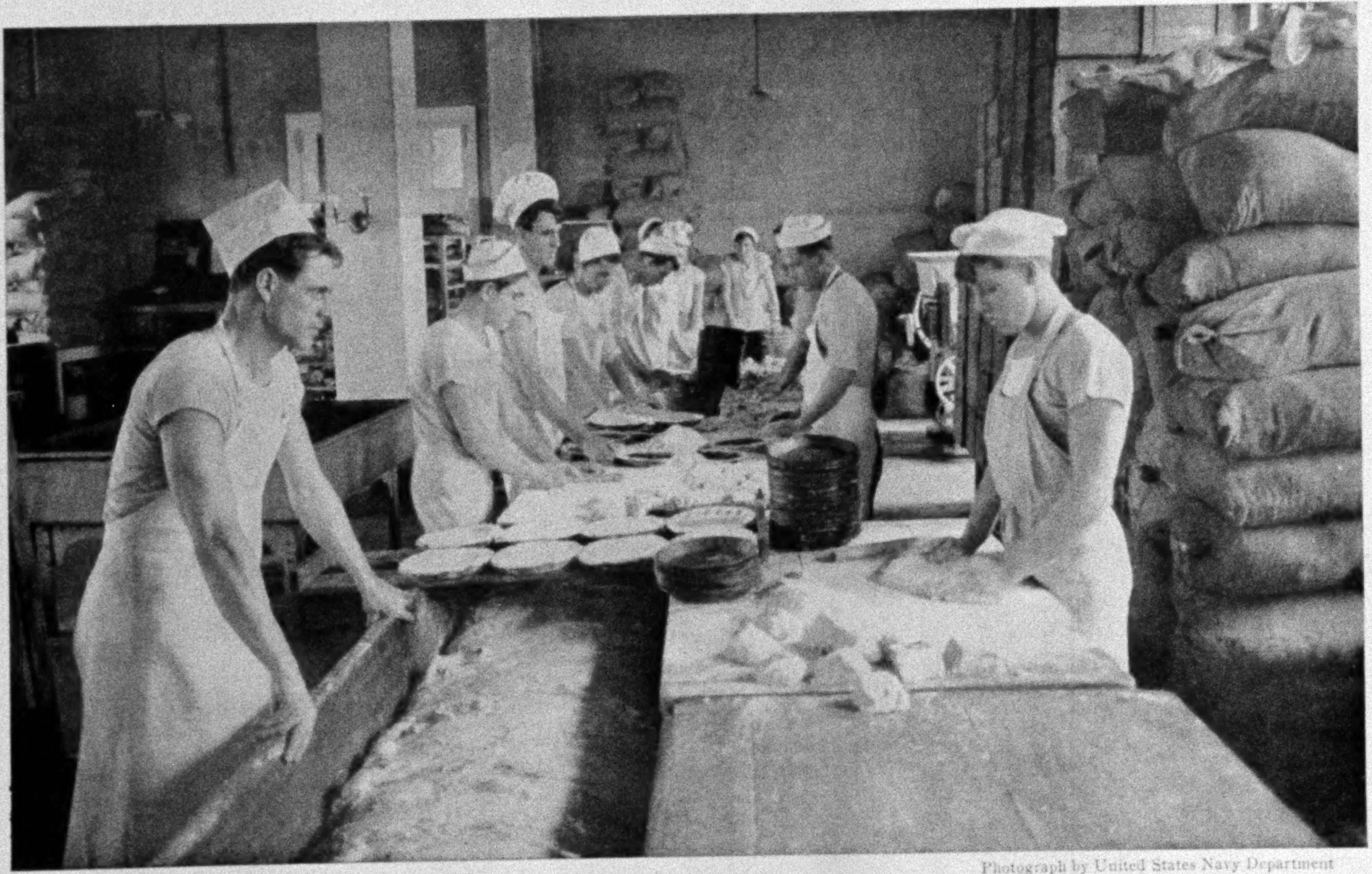
SCHOOL FOR SAILORS, NAVAL TRAINING STATION: NEWPORT, R. I.

Instead of working at a blackboard with chalk, these pupils solve their problems on a wooden rail with rope. The course in elementary seamanship conducted in this rigging loft includes a mastery of the subject of knotting and splicing

Photograph by United States Navy Department

PASTRY CLASS, COMMISSARY SCHOOL, NAVAL TRAINING STATION: NEWPORT, R. I.

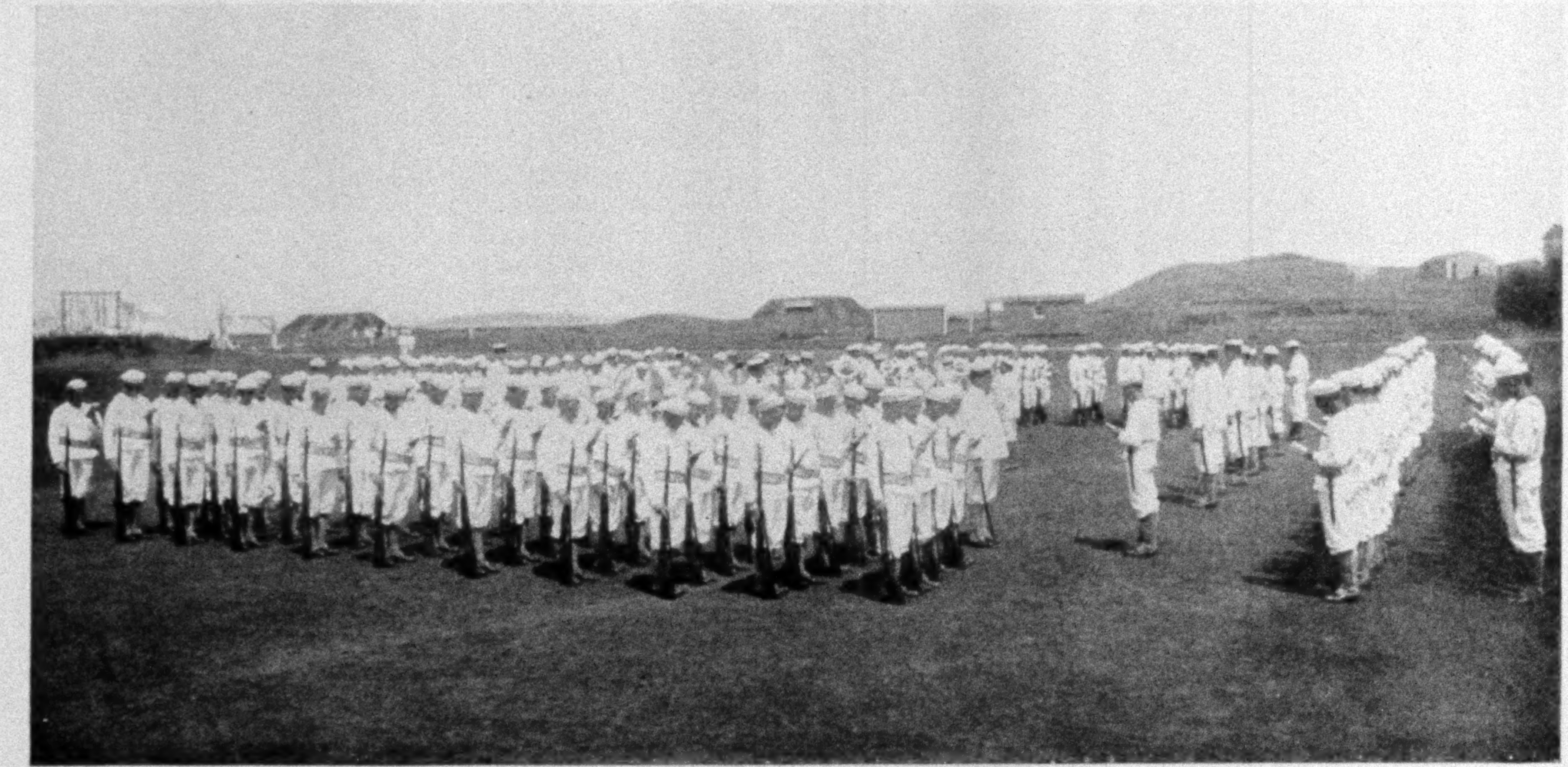
To be "well versed in the arts of pies, custards, and tarts" is an accomplishment no less vital to the success of a navy than gunnery or signaling. Each must do his bit on a warship, and one of the most important of these is cookery, which keeps in fighting trim the man who points the gun and the officer who navigates the ship.



Photograph by United States Navy Department

CLASS FOR BAKERS, COMMISSARY SCHOOL, NAVAL TRAINING STATION: NEWPORT, R. I.

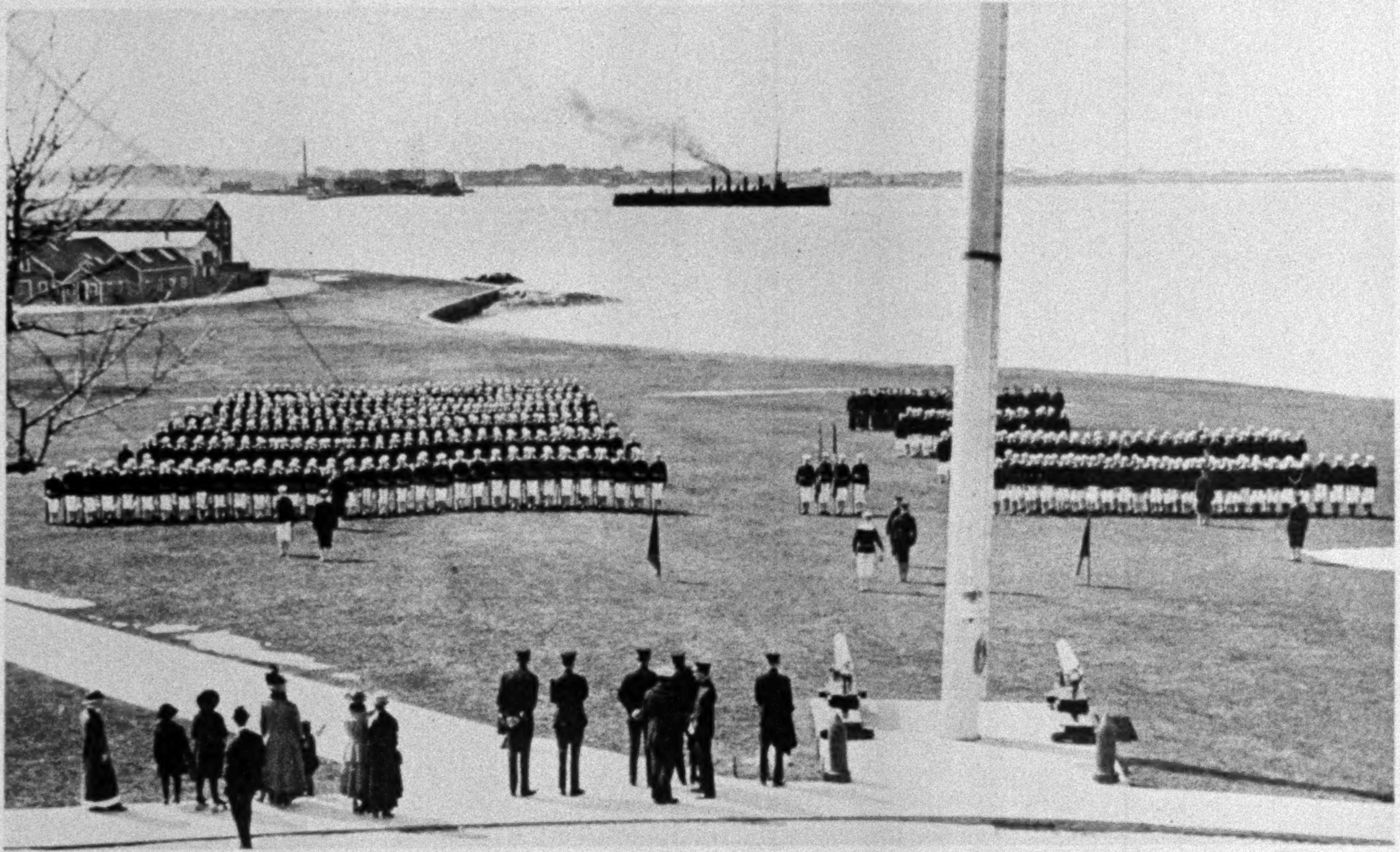
Napoleon's axiom as to the part of its anatomy on which an army travels applies with equal force to a navy. Uncle Sam is careful to see that his marines and bluejackets are provided not only with ample but with *wholesome* food; hence his schools for cooks.



Photograph by United States Navy Department

LEARNING THE NATIONAL AIR

An open-air singing class at the Naval Training Station, Newport, R. I. American bluejackets and marines are not expected to rival grand opera barytones and tenors, but they are supposed to know how to sing "The Star Spangled Banner."



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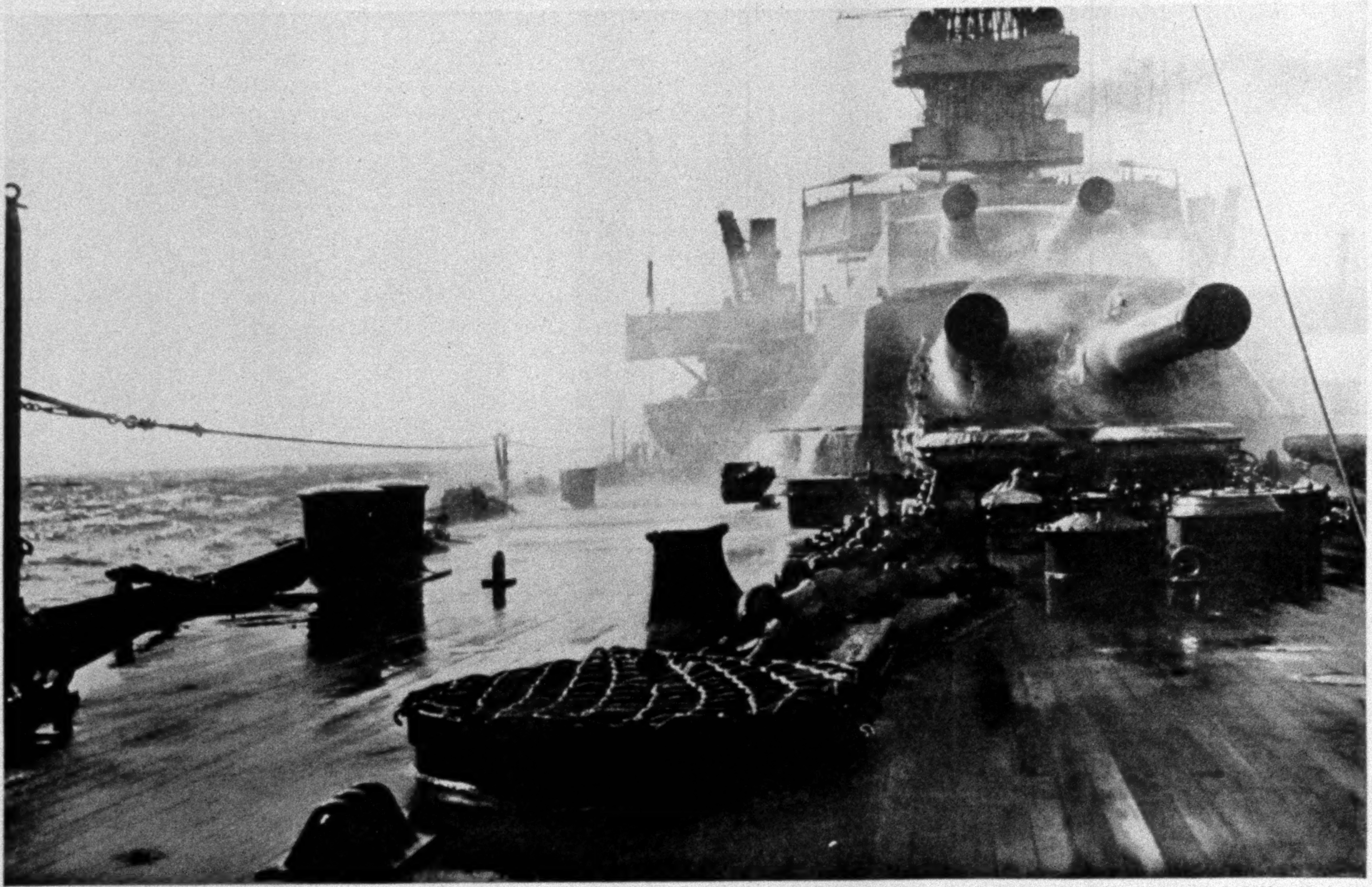
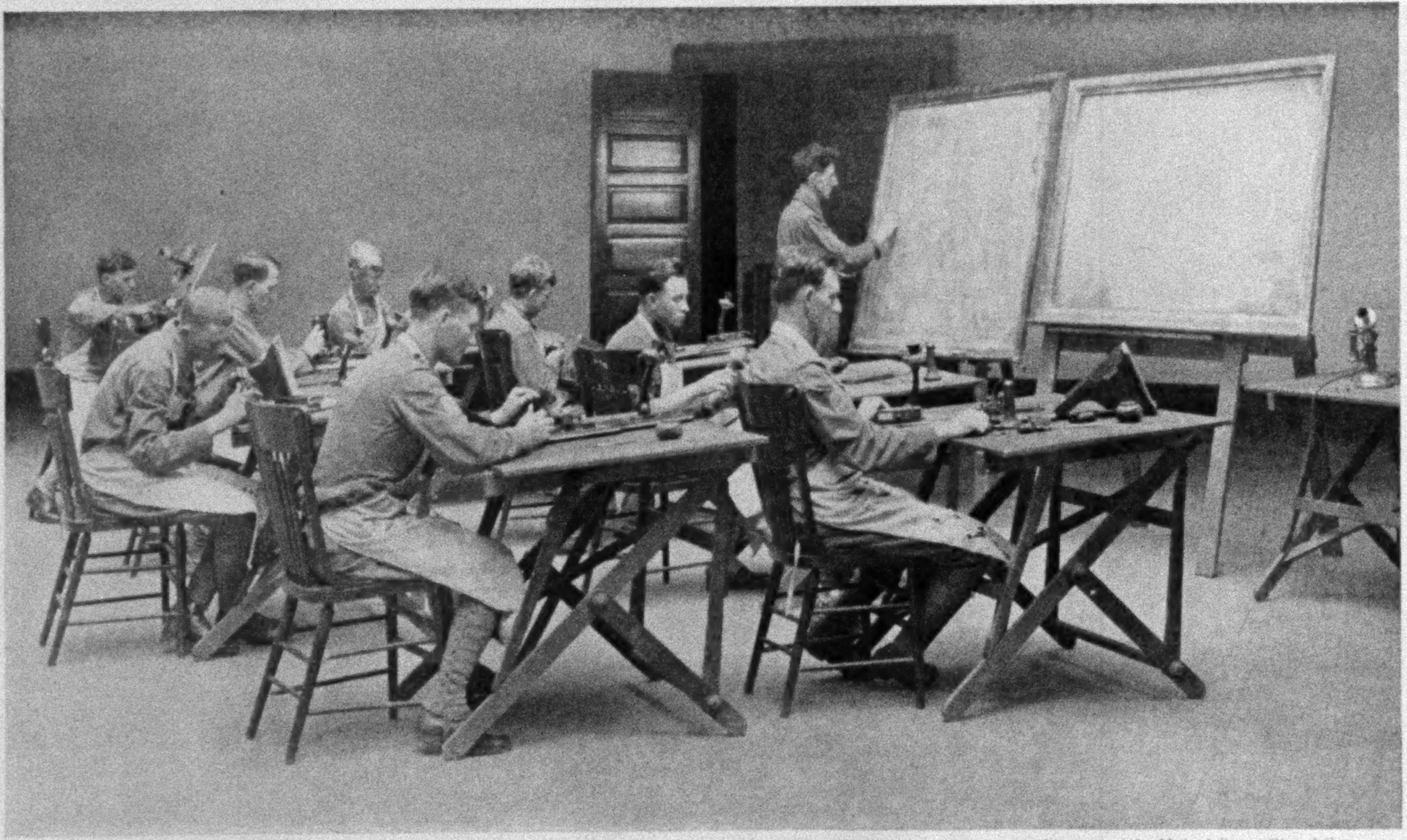
LINED UP FOR INSPECTION

Naval recruits at the Newport Naval Training Station. The cruiser *Birmingham* can be seen in the background.



© Lieutenant Commander James B. Gilmer, U. S. S. New York

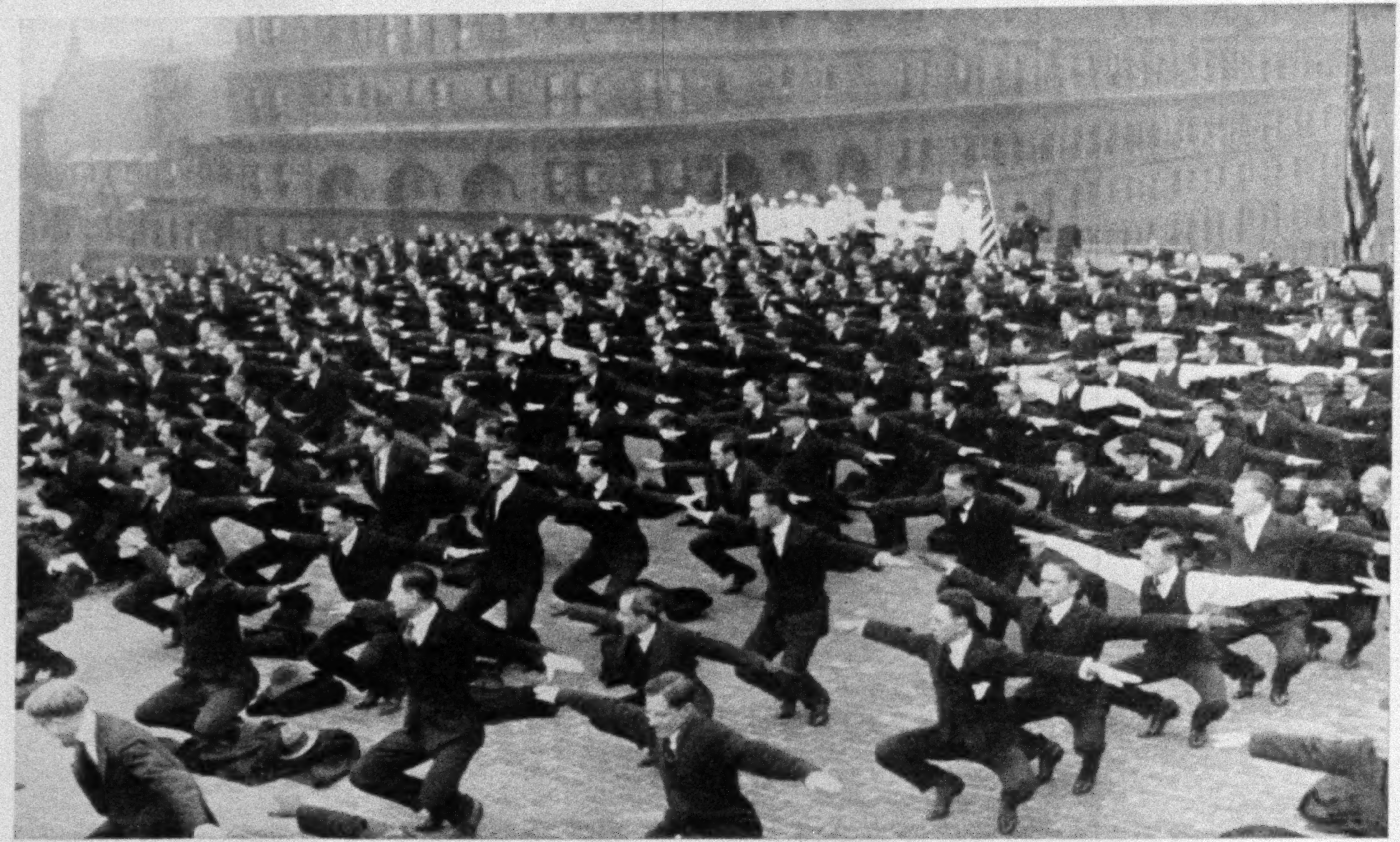
OCEAN SPRAY: U. S. S. "NEW YORK"



Photograph by United States Signal Corps

CLASS IN TELEPHONY: ENLISTED MEN, U. S. ARMY

The province of the telephone in modern warfare is constantly broadening. It is one of the agencies which has robbed battle of much of its picturesqueness, romance, and glamor; for the dashing dispatch rider on his foam-flecked steed is practically a being of the past, more antiquated than the armored knight of medieval days. A message sent by telephone annihilates space and time, whereas the dispatch rider would, in most cases, be annihilated by shrapnel.



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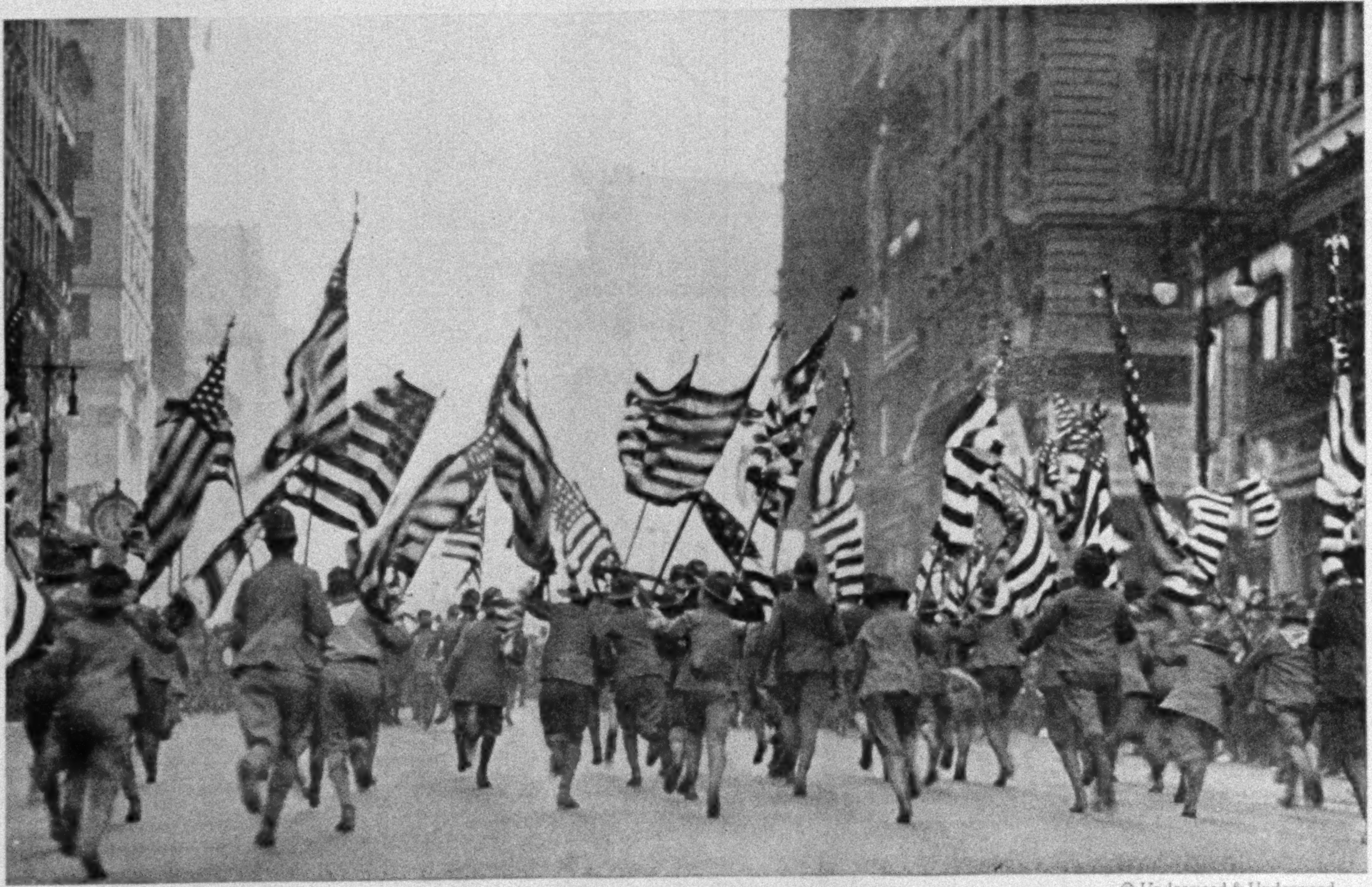
DEPARTMENT STORE EMPLOYEES PREPARING FOR WAR

"An army of clerks and shopkeepers!" was the scornful epithet which the militaristic Prussians hurled at Britain's first hundred thousands sent to the trenches. But derision soon changed to admiration. Among America's first five hundred thousand, also, there will be many clerks, salesmen, bookkeepers, and floor-walkers, including some of the 600 stalwart young men shown here—men who are giving a portion of their luncheon time each day to physical training on the roof of the big New York department store in which they are employed. The girls in the background are salesgirls who have organized as a corps of nurses under the direction of the store physician.



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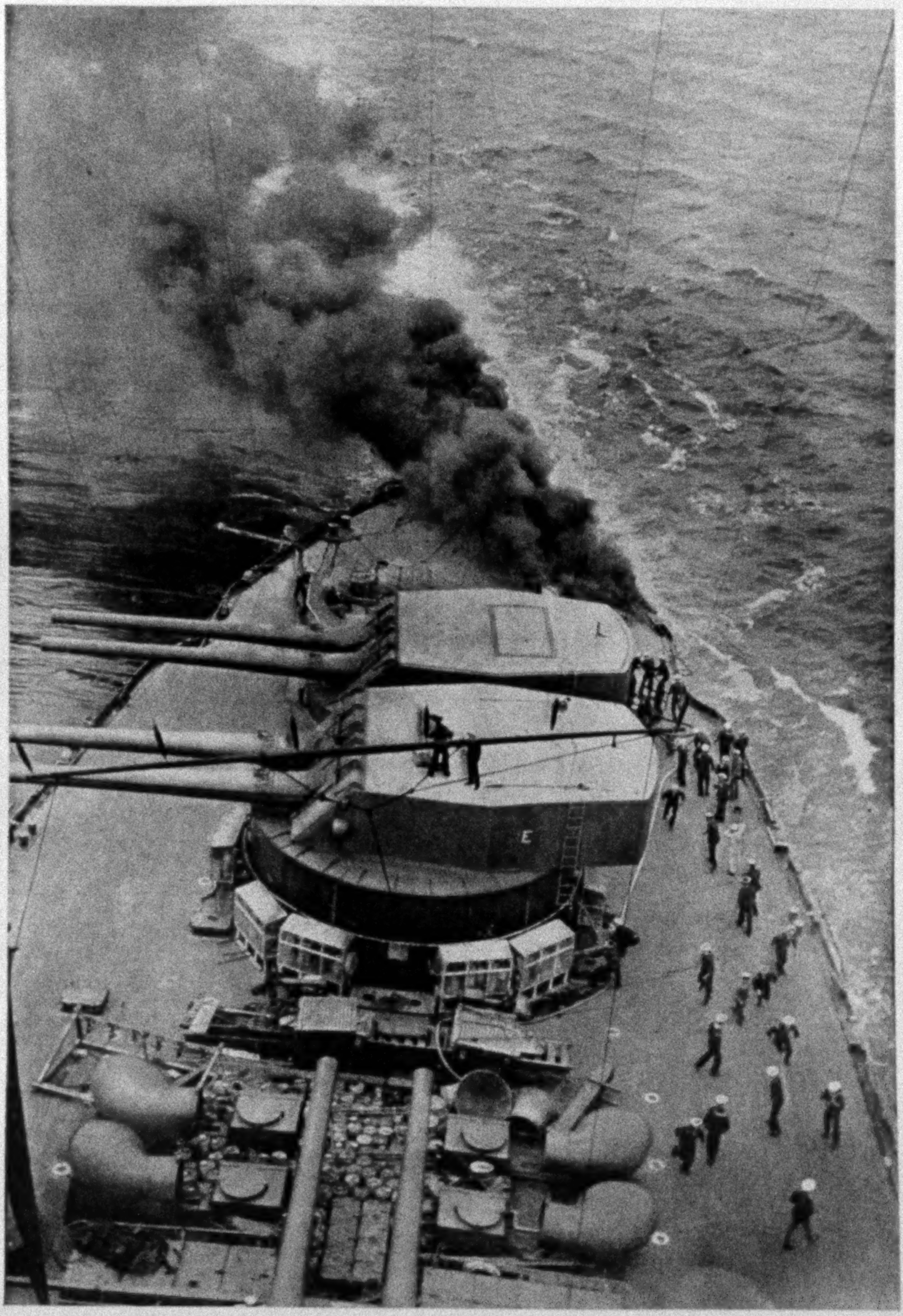
"WAKE UP, AMERICA!"

It was an inspiring moment when, during the great parade up Fifth avenue, New York, recently, the boy scouts charged with flags flying



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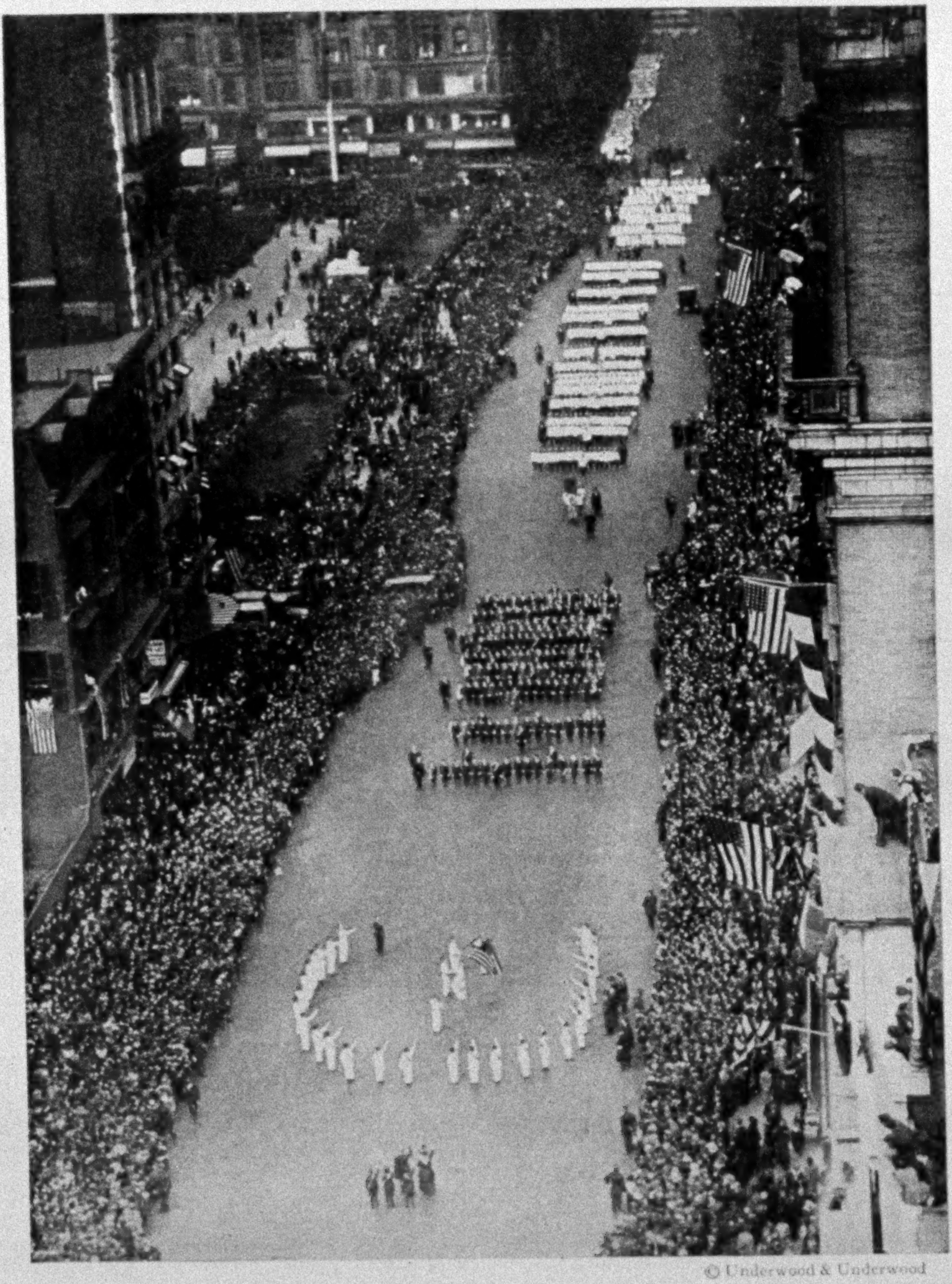
BATTLESHIP ABLAZE IN MID-OCEAN

Owing to the perfect organization of the crew of a thousand or more men on a superdreadnought, a fire at sea is not usually so serious as a landsman would imagine. With the first alarm each individual on board becomes a fire-fighter, rushing to his post of duty. Water compartments are closed and preparations are made for flooding the magazines if the flames threaten these store-rooms of destruction.



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SALUTING THE FLAG

An impressive ceremony which took place in Fifth Avenue, New York, opposite the Union League Club reviewing stand during the recent "Wake Up, America" celebration. Thousands marched in the procession; hundreds of thousands lined the great thoroughfare and voiced their approval in a succession of cheers.

THE OUTSPEAKING OF A GREAT DEMOCRACY

The Proceedings of the Chamber of Deputies of France on Friday, April 6, 1917, as Reported in the "Journal Officiel de La République Francaise"

PRESIDENT OF THE CHAMBER OF DEPUTIES: The President of the Council has the floor.

MR. RIBOT, PRESIDENT OF THE COUNCIL, MINISTER OF FOREIGN AFFAIRS: Before the Chamber adjourns the Government asks it to address a cordial greeting to the great Republic of the United States. (*Cheers. All the deputies rise, turn toward the diplomatic gallery, and applaud [the Ambassador of the United States being in the gallery]. Many cries of "Long live the Republic."*)

You have read the admirable message of President Wilson. We all feel that something great, something which exceeds the proportions of a political event, has been accomplished. (*Cries of assent.*)

It is an historic fact of unequaled importance (*applause*)—this entry into the war on the side of us and our allies by the most peaceful democracy in the world. (*Loud applause.*) After having done everything to affirm its attachment to peace, the great American nation declares solemnly that it cannot remain neutral in this immense conflict between right and violence, between civilization and barbarism. (*Loud and prolonged applause.*) It holds that honor requires it to take up the defiance flung at all rules of international law so laboriously built up by civilized nations. (*Applause.*)

It declares at the same time that it is not fighting for self-interest, desires neither conquest nor compensation, intends only to help toward a victory of the cause of law and liberty. (*All the deputies rise and applaud.*)

A MESSAGE OF DELIVERANCE

The grandeur, the nobility, of this action is enhanced by the simplicity and serenity of the language of the illustrious leader of that great democracy. (*Loud applause.*)

If the world had entertained the least doubt of the profound meaning of this war in which we are engaged, the message of the President of the United States would dissipate all obscurity. It makes apparent to all that the struggle is verily a struggle between the liberal spirit of modern societies and the spirit of oppression of societies still enslaved to military despotism. (*Prolonged applause.*) It is for this reason that the message rings in the depths of all hearts like a message of deliverance to the world. (*Applause.*)

The people which, under the inspiration of the writings of our philosophers, declared its rights in the eighteenth century, the people who place Washington and Lincoln foremost among their heroes (*applause*), the people who in the last century suffered a civil war for the abolition of slavery (*cheers; the whole Chamber rises and applauds*), were indeed worthy to give such an example to the world.

Thus they remain faithful to the traditions of the founders of their independence and demonstrate that the enormous rise of their industrial strength and of their economic and financial power has not weakened in them that need for an ideal without which there can be no great nation. (*Applause.*)

A FRIENDSHIP RATIFIED IN BLOOD

What touches us particularly is that the United States has held to the friendship which at an earlier time was ratified in blood. (*Applause.*) We bear witness with grateful joy to the enduring sympathy between the peoples, which is one of the delicate virtues the bosom of a democracy can nourish.

The Star-spangled Banner and the Tricolor will fly side by side; our hands will join; our hearts beat in unison. This will mean for us, after so much suffering, heroically borne, so many bereavements, so many ruins, a renewal of the sentiments which have animated and sustained us during this long trial. The powerful, decisive aid which the United States brings us is not only a material aid; it will be especially moral aid, a real consolation. (*Loud applause.*)

Seeing the conscience of peoples everywhere in the world awake and rise in an immense protest against the atrocities of which we are the victims, we feel more keenly that we are fighting not only for ourselves and for our allies, but for something immortal (*applause*), and that we are laying the foundations of a new order. (*Loud applause.*) Thus our sacrifices will not have been in vain; the generous blood poured out by the sons of France will have sowed fertile seeds in the ideas of justice and of liberty fundamentally necessary to concord between nations. (*Applause.*)

In the name of the whole country, the government of the French Republic addresses to the government and people of the United States, with the expression of its gratitude, its warmest good wishes. (*Prolonged cheers. All the deputies rise and turn applauding to the diplomatic gallery.*)

THE HARVEST OF JUSTICE

MANY VOICES: The proclamation!

MR. PAUL DECHANEL, PRESIDENT OF THE CHAMBER: The proclamation of the speech which the Chamber has just applauded is asked. There is no opposition? The proclamation is ordered.

The French Chamber greets with enthusiasm the verdict of the President of the Republic of the United States, who has indeed spoken for justice, and the vigorous decision of the Federal Senate accepting the war imposed by Germany.

Æschylus says in "The Persians": "When insolence takes root, it grows into crime; the harvest is suffering."

And we can say: "The growth of the crime brings vengeance; after the harvest of suffering comes the harvest of justice!" (*Loud applause.*)

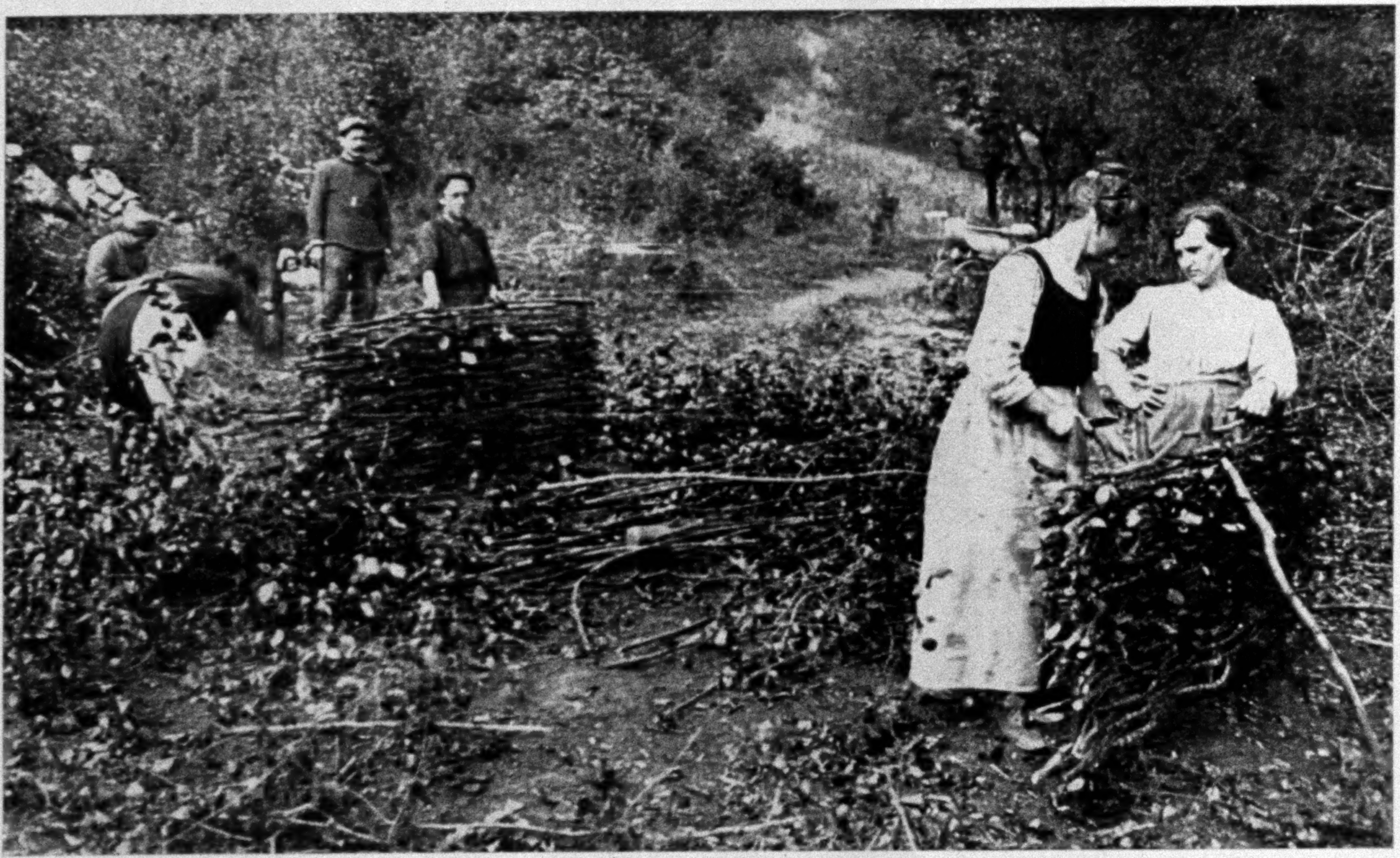
The cry of the women and children from the depths of the abyss where hideous wickedness flung them echoed from one end of the earth to the other. Washington and Lincoln trembled in their graves; their great spirit has roused America. (*Loud applause.*)

And is it a question only of avenging Americans? Is it a question only of punishing the violation of treaties signed by the United States? No; the eternal truths proclaimed in the Declaration of 1776, the sacred causes which La Fayette and Rochambeau defended (*applause*), the ideal of pure consciences from which the great Republic was born—honor, morality, liberty—these are the supreme values which shine in the folds of the Star-spangled Banner. (*Loud applause.*)

ALL AMERICA ARRAYED AGAINST MAD ARROGANCE

Descendants of the Puritans of New England, brought up on the precepts of the Gospel, and who under the eyes of God are about to punish the infernal creation of evil, falsehood, perjury, assassination, profanation, rape, slavery, martyrdom, and all kinds of disasters; Catholics, struck to the heart by curses against their religion, by outrages against their cathedrals and statues, reaching a climax in the destruction of Louvain and Rheims; university professors, trustworthy guardians of law and learning; industrialists of the East and Middle West, farmers and agriculturists of the West; workmen and artisans, threatened by the torpedoing of vessels, by the interruption of commerce, revolted by the insults to their national colors—all are arrayed against the mad arrogance which would enslave the earth, the sea, the heavens, and the souls of men. (*Prolonged applause and cheers.*)

At a time when, as in the heroic times of the American Revolution, the Americans are to fight with us, let us repeat once more: We wish to prevent no one from living, working, and trading freely; but the tyranny of Prussia has become a peril for the New World as for the Old, for England as for Russia, for Italy as for Austria, and for Germany itself. (*Applause.*) To free the world, by a common effort of all democratic peoples,



WOMEN IN THE DEPARTMENT OF MEURTHE AND MOSELLE EMPLOYED IN FASHIONING DEFENSE WORK FOR THE SOLDIERS

These screens of brushwood have a variety of uses, including their employment as masks for concealed batteries and dugouts. The ancestors of these weavers of twigs and saplings made France famous as weavers of the matchless Gobelin tapestries.

from the yoke of a feudal and military caste in order to found peace upon right, is a work of human deliverance and universal good. (*Applause.*)

THE IMMORTAL ACT OF A GLORIOUS NATION

In accomplishing, under an administration henceforth immortal (*applause, cheers; all rise and applaud*), the greatest act in its annals since the abolition of slavery, the glorious nation whose whole history is but a development of the idea of liberty (*applause*) remains true to its lofty origin and creates for itself another claim to the gratitude of mankind. (*Applause.*)

The French Republic, across the ruins of its cities and its monuments, devastated without reason or excuse by shameful savagery (*loud applause*), sends to its beloved sister Republic in America the palms of the Marne, the Yser, and of Verdun and the Somme, to which new victories will soon be added. (*Prolonged applause, cheers; all the deputies rise.*)

MANY VOICES: We call for the proclamation!

MR. COLLIARD: I ask that the two speeches which the Chamber has just heard be issued as proclamations and read in the schools of France.

MR. MAUGER: I second the motion.

PRESIDENT OF THE CHAMBER: The proclamation of the speeches which the Chamber has just heard is requested. There is no opposition? The proclamation is ordered.

OUR HERITAGE OF LIBERTY

An Address Before the United States Senate by M. Viviani, President of the French Commission to the United States, May 1, 1917

MR. PRESIDENT AND SENATORS: Since I have been granted the supreme honor of speaking before the representatives of the American people, may I ask them first to allow me to thank this magnificent Capital for the welcome it has accorded us? Accustomed as we are in our own free land to popular manifestations, and though we had been warned by your fellow-countrymen who live in Paris of the enthusiasm burning in your hearts, we are still full of the emotion raised by the sights that awaited us.

I shall never cease to see the proud and stalwart men who saluted our passage; your women, whose grace adds fresh beauty to your city, their arms outstretched, full of flowers; and your children hurrying to meet us as if our coming were looked upon as a lesson for them—all with one accord acclaiming in our perishable persons immortal France.

And I predict there will be a yet grander manifestation on the day when your illustrious President, relieved from the burden of power, will come among us bearing the salute of the Republic of the United States to a free Europe, whose foundations from end to end shall be based on right.

It is with unspeakable emotion that we crossed the threshold of this legislative palace, where prudence and boldness meet, and that I for the first time in the annals of America, though a foreigner, speak in this hall which only a few days since resounded with the words of virile force.

A MAGNIFICENT EXAMPLE FOR ALL DEMOCRACIES

You have set all the democracies of the world the most magnificent example. So soon as the common peril was made manifest to you, with simplicity and within a few short days you voted a formidable war credit and proclaimed that a formidable army was to be raised. President Wilson's commentary on his acts, which you made yours, remains in the history of free peoples the weightiest of lessons.

Doubtless you were resolved to avenge the insults offered your flag, which the whole world respected; doubtless through the thickness of these massive walls the mournful cry of all the victims that criminal hands hurled into the depths of the sea has reached and stirred your souls; but it will be your honor in history that

Photograph by Paul Thompson

BARRELS OF PORCELAIN AT THE DOORS OF A FRENCH FACTORY READY FOR SHIPMENT TO THE UNITED STATES: LIMOGES, FRANCE

Those industrial institutions whose skilled workmen were required neither for the trenches nor for the munition factories France has endeavored to operate without interruption. The ceramic establishments which were not requisitioned for the manufacture of crucibles needed in producing high explosives have continued to make beautiful porcelain, thus contributing their bit toward the financial welfare of the nation.

you also heard the cry of humanity and invoked against autocracy the right of democracies.

And I can only wonder as I speak what, if they still have any power to think, are the thoughts of the autocrats who three years ago against us, three months ago against you, unchained this conflict.

Ah! doubtless they said among themselves that a democracy is an ideal government; that it showers reforms on mankind; that it can in the domain of labor quicken all economic activities. And yet now we see the French Republic fighting in defense of its territory and the liberty of nations and opposing to the avalanche let loose by Prussian militarism the union of all its children, who are still capable of striking many a weighty blow.

And now we see England, far removed like you from conscription, who has also, by virtue of a discipline all accept, raised from her soil millions of fighting men. And we see other nations accomplishing the same act; and that liberty not only inflames all hearts, but coördinates and brings into being all needed efforts.

And now we see all America rise and sharpen her weapons in the midst of peace for the common struggle.

ORGANIZING THE FEDERATION OF THE WORLD

Together we will carry on that struggle, and when by force we have at last imposed military victory our labors will not be concluded. Our task will be—I quote the noble words of President Wilson—to organize the society of nations.

I well know that our enemies, who have never seen before them anything but horizons of carnage, will never cease to jeer at so noble a design. Such has always been the fate of great ideas at their birth; and if thinkers and men of action had allowed themselves to be discouraged by skeptics, mankind would still be in its infancy and we should still be slaves. After material victory we will win this moral victory.

We will shatter the ponderous sword of militarism; we will establish guaranties for peace; and then we can disappear from the world's stage, since we shall leave at the cost of our common immolation the noblest heritage future generations can possess.

THEIR MONUMENT IS IN OUR HEARTS

Address by M. Viviani Before the Tomb of Washington, at Mount Vernon, April 29, 1917

WE COULD not remain longer in Washington without accomplishing this pious pilgrimage. In this spot lies all that is mortal of a great hero. Close by this spot is the modest abode where Washington rested after the tremendous labor of achieving for a nation its emancipation.

In this spot meet the admiration of the whole world and the veneration of the American people. In this spot rise before us the glorious memories left by the soldiers of France led by Rochambeau and Lafayette; a descendant of the latter, my friend, M. de Chambrun, accompanies us.

And I esteem it a supreme honor, as well as a satisfaction for my conscience, to be entitled to render this homage to our ancestors in the presence of my colleague and friend, Mr. Balfour, who so nobly represents his great nation. By thus coming to lay here the respectful tribute of every English mind he shows, in this historic moment of communion which France has willed, what nations that live for liberty can do.

When we contemplate in the distant past the luminous presence of Washington, in nearer times the majestic figure of Abraham Lincoln; when we respectfully salute President Wilson, the worthy heir of these great memories, we at one glance measure the vast career of the American people.

It is because the American people proclaimed and won for the nation the right to govern itself, it is because it proclaimed and won the equality of all men, that the free American people at the hour marked by fate has been enabled with commanding force to carry its action beyond the seas; it is because it was resolved to extend its action still further that Congress was enabled to obtain within the space of a few days the vote of conscription and to proclaim the necessity for a national army in the full splendor of civil peace.

In the name of France, I salute the young army which will share in our common glory.

FIGHTING FOR WASHINGTON'S IDEALS

While paying this supreme tribute to the memory of Washington, I do not diminish the effect of my words when I turn my thought to the memory of so many unnamed heroes. I ask you before this tomb to bow in earnest meditation and all the fervor of piety before all the soldiers of the allied nations who for nearly three years have been fighting under different flags for some ideal.

I beg you to address the homage of your hearts and souls to all the heroes, born to live in happiness, in the tranquil pursuit of their labors, in the enjoyment of all human affections, who went into battle with virile cheerfulness and gave themselves up, not to death alone, but to the eternal silence that closes over those whose sacrifice remains unnamed, in the full knowledge that, save for those who loved them, their names would disappear with their bodies.

Their monument is in our hearts. Not the living alone greet us here; the ranks of the dead themselves rise to surround the soldiers of liberty.

At this solemn hour in the history of the world, while saluting from this sacred mound the final victory of justice, I send to the Republic of the United States the greetings of the French Republic.

THE OLDEST FREE ASSEMBLIES

Address of Right Hon. Arthur J. Balfour, in the United States House of Representatives, May 5, 1917

MR. SPEAKER, LADIES AND GENTLEMEN OF THE HOUSE OF REPRESENTATIVES: Will you permit me, on behalf of my friends and myself, to offer you my deepest and sincerest thanks for the rare and valued honor which you have done us by receiving us here today?

We all feel the greatness of this honor; but I think to none of us can it come home so closely as to one who, like myself, has been for 43 years in the service of a free assembly like your own. I rejoice to think that a member—a very old member, I am sorry to say—of the British House of Commons has been received here today by this great sister assembly with such kindness as you have shown to me and to my friends.

Ladies and gentlemen, these two assemblies are the greatest and the oldest of the free assemblies now governing great nations in the world. The history indeed of the two is very different.

The beginnings of the British House of Commons go back to a dim historic past, and its full rights and status have only been conquered and permanently secured after centuries of political struggle.

Your fate has been a happier one. You were called into existence at a much later stage of social development. You came into being complete and perfected and all your powers determined, and your place in the Constitution secured beyond chance of revolution; but, though the history of these two great assemblies is different, each of them represents the great democratic principle to which we look forward as the security for the future peace of the world.

ALL FREE ASSEMBLIES MODELED AFTER THE BRITISH PARLIAMENT AND AMERICAN CONGRESS

All of the free assemblies now to be found governing the great nations of the earth have been modeled either upon your practice or upon ours or upon both combined.

Mr. Speaker, the compliment paid to the mission from Great Britain by such an assembly and upon such an occasion is one not one of us is ever likely to forget. But there is something, after all, even deeper and more significant in the circumstances under which I now have the honor to address you than any which arise out of the interchange of courtesies, however sincere, between the great and friendly nations.

We all, I think, feel instinctively that this is one of the great moments in the history of the world, and that what is now happening on both sides of the Atlantic represents the drawing together of great and free peoples for mutual protection against the aggression of military despotism.

I am not one of those, and none of you are among those, who are such bad democrats as to say that democracies make no mistakes. All free assemblies have made blunders; sometimes they have committed crimes.

PURSUING THE APPALLING OBJECT OF DOMINATING CIVILIZATION

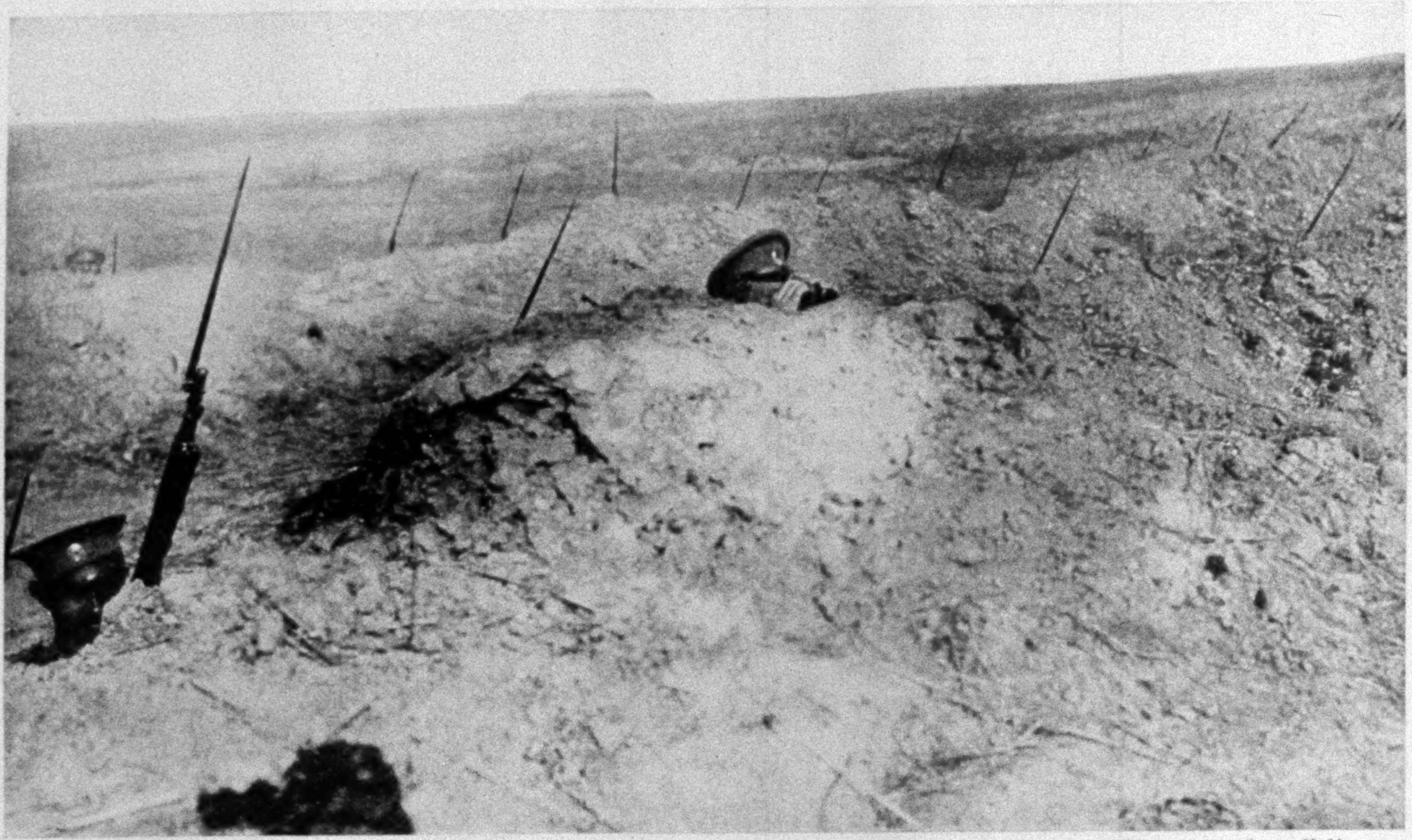
Why is it, then, that we look forward to the spread of free institutions throughout the world, and especially among our present enemies, as one of the greatest guaranties of the future peace of the world? I will tell you, gentlemen, how it seems to me. It is quite true that the people and the representatives of the people may be betrayed by some momentary gust of passion into a policy which they ultimately deplore; but it is only a military despotism of the German type which can, through generations if need be, pursue steadily, remorselessly, unscrupulously, the appalling object of dominating the civilization of mankind.

TYPES OF THE MEN WHO DEFENDED WARSAW TILL THE END

Photographs by George H. Mewes

RUSSIAN WOUNDED GOING TO THE REAR

Motor ambulances are a rare luxury in Russia and the wounded are frequently two and three days in peasants' carts before they reach the railhead or base hospitals



Photograph by George H. Mewes

TYPICAL REAR-GUARD TRENCHES IN THE GREAT RUSSIAN RETREAT: A SHELL BURST OVER THIS POSITION JUST AS THE PICTURE WAS TAKEN

And, mark you, this evil, this menace under which we are now suffering, is not one which diminishes with the growth of knowledge and the progress of material civilization, but, on the contrary, it increases with them.

When I was young we used to flatter ourselves that progress inevitably meant peace, and that growth of knowledge was always accompanied, as its natural fruit, by the growth of good will among the nations of the earth. Unhappily, we know better now, and we know there is such a thing in the world as a power which can with unvarying persistency focus all the resources of knowledge and of civilization into the one great task of making itself the moral and material master of the world.

It is against that danger that we, the free peoples of western civilization, have banded ourselves together. It is in that great cause that we are going to fight, and are now fighting this very moment, side by side.

In that cause we shall surely conquer, and our children will look back to this fateful date as the one day from which democracies can feel secure that their progress, their civilization, their rivalry, if need be, will be conducted, not on German lines, but in that friendly and Christian spirit which really befits the age in which we live.

Mr. Speaker, ladies and gentlemen, I beg most sincerely to repeat again how heartily I thank you for the cordial welcome which you have given us today, and to repeat my profound sense of the significance of this unique meeting.

THE RUSSIAN SITUATION AND ITS SIGNIFICANCE TO AMERICA

By Stanley Washburn

NOW that America has entered the world war and, in spirit if not by treaty, has become one of the Allies who are engaged in this incomparable conflict for the idea of world democracy, it becomes of fundamental importance that we, as a people, realize, and at once, the factors in this war with which and through which we must work in order that by our united effort we may consummate the sacrifice of blood and treasure by the achievement of an enduring peace in Europe and throughout the world.

Of France, our traditional friend, we know much. Our realization of what England has done in the war is, for the first time, receiving the appreciation which is its due.

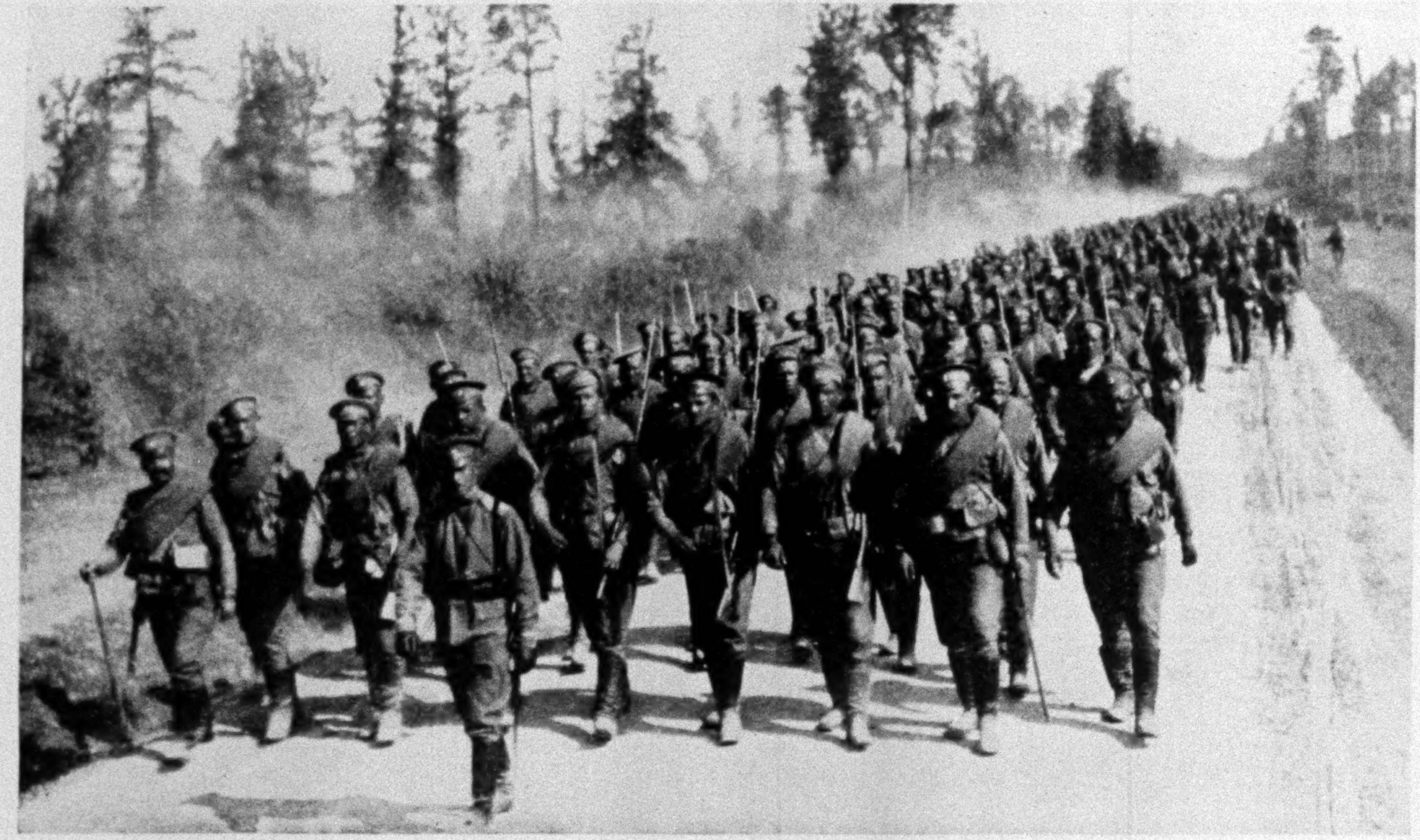
Of far and distant Russia there seems to be apparently little known in America. The world is aware in a general way that the Russians have made huge sacrifices and have been fighting an uphill battle on the far eastern front.

At this time, when we must in so large a measure depend on the coöperation and assistance of the great Republic, it is important that it should be realized exactly what Russia has contributed to the war and what her remaining in the war until the end means to the Allies, and to America in particular. For this reason I wish to trace briefly Russia's part in this conflict and what it has represented.

To understand the almost insurmountable handicaps under which the Russians have been laboring, it is necessary to appreciate the nature and importance of the German influence in Russia, which for the last few decades has become such a vital menace to the independence of the Russian people.

TEUTON INFLUENCES IN RUSSIA

After the Franco-Prussian War, when the new economic and industrial era began to develop in the Teuton Empire, it was but natural that the Germans should look to Russia for their most important



Photograph by George H. Mewes

RUSSIAN TROOPS GOING TO THE FRONT: SUPPORTS FOR THE IMPERIAL GUARDS BEING HURRIED INTO THE FIGHTING LINE market. At first this outlet for their trade was a luxury to their economic development, but as, to a greater and greater extent, their trade became committed to this vast territory it became more and more of an economic necessity that they retain and increase their grip on Russia.

The northern or Baltic provinces of Russia are very largely populated by persons of German blood who have for many generations been Russian subjects. It is natural that these people, in a measure, should feel and understand German aspirations and aid and abet in their plans where possible.

By this I do not mean to assert that all Baltic Russians are pro-German, for some of the ablest and most loyal men and devoted troops have come from this part of Russia; but it is true that many of the worst influences have also been of Baltic province extraction. For ten years before the war we can trace the German influence moving through every specious channel of intrigue and malevolent activity to gain ascendency in the internal policies of the Russian Government.

GERMANS OPPOSE A LIBERAL RUSSIA

There is little reason to doubt that the German influence has aimed in every way to check the growth of liberalism in Russia. There are many who believe that but for the German influence there would have come the abolition of vodka five years before the war. The elimination of this curse would have meant education, and with education inevitably must have come a demand for a more liberal government and a ministry responsible to the Duma.

Alone the Germans could not have hoped to exert this influence; but we find in Russia another group, commonly known as the bureaucracy, who had a community of interests with the Teutons. The bureaucracy represents the office-holders and officials appointed by the Throne, who have for generations, and one might almost say for centuries, preyed upon the resources of the Russian Empire, which, unchecked, have flown irresponsively through a small group of public buildings in the Russian capital.

There has been during and before the war a coöperation between these two parties, the enduring prestige of which depended on German victory and Russian defeat. It is clear that if Germany had been overwhelmingly defeated, both the pro-Germans and the bureaucrats would have lost the hold they had on the Russian Empire.

RUSSIA'S UNPREPAREDNESS

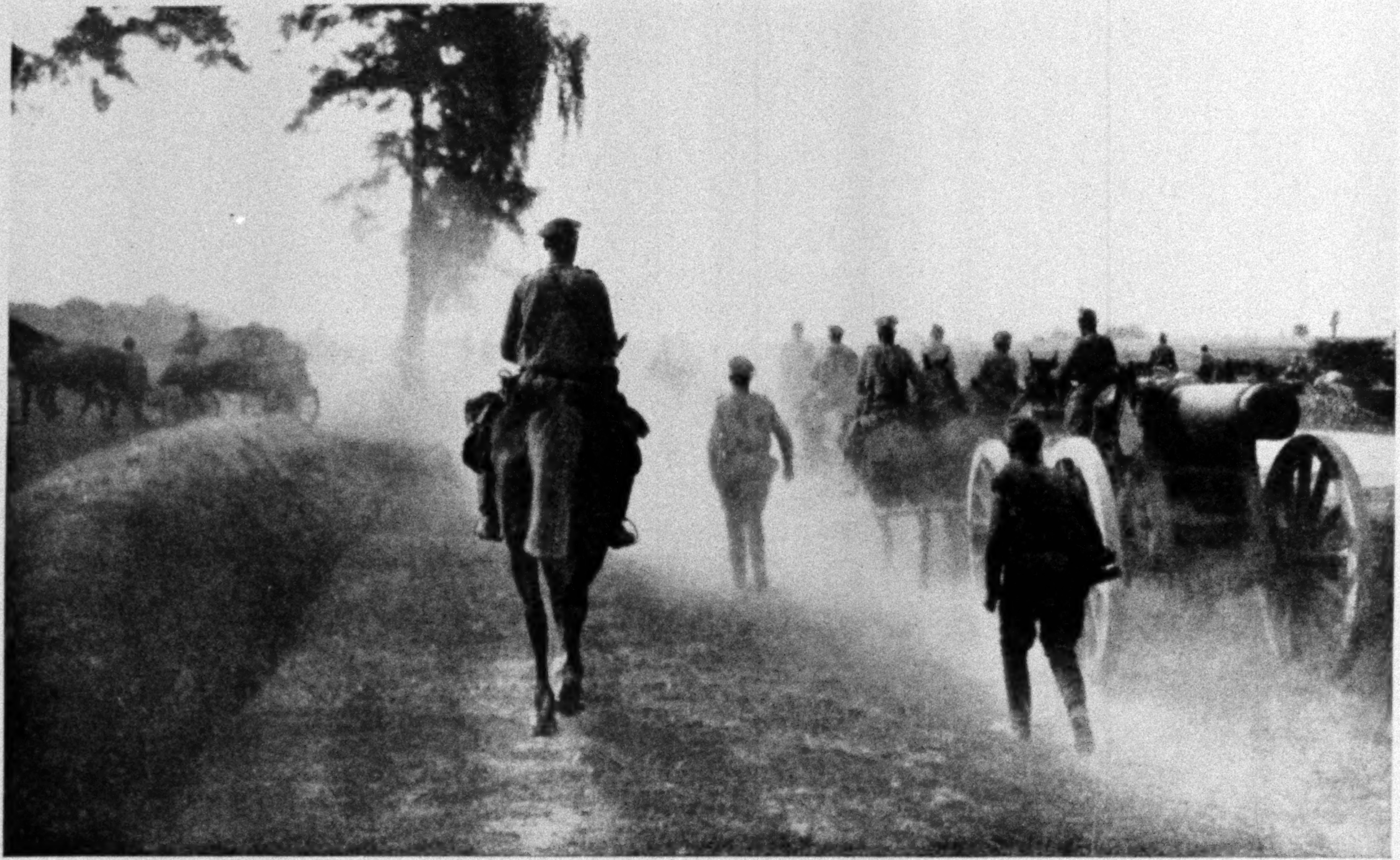
It is probably true that none of these dark forces had any great apprehension at the beginning of the war that Germany could lose; for, being well aware of Russia's unpreparedness, it seemed incredible that she could triumph over her enemy—efficient, complete, and ready for the war.

Russia owes to the Grand Duke Nicholas Nicholaievitch the salvation of the Russian cause, for during the first six months, with the absolute power delegated to him by the Tsar, he completely upset the original military program of the Russian General Staff in Petrograd and of the Minister of War, Sukomlinov, afterward removed for corruption and alleged treachery.

The original Russian program seems to have contemplated an early defensive. By a suspicious coincidence the German plan of campaign had anticipated the supposed negative campaign of the Russians and little effort had, therefore, been made for the defense of East Prussia, the greater part of German energy being directed toward the invasion of France.

The Grand Duke, loyal to the cause of the Allies and faithful to the interests of Russia, in quick response to the appeals from France, upset, almost over night, the original defensive program and launched his East Prussian campaign.

The Germans were probably taken by complete surprise as perhaps was the Russian Minister of War in Petrograd. The result of the Grand Duke's offensive in August, 1914, was to fill the Unter den Linden in Berlin with refugees fleeing panic stricken from East Prussia. It was impossible for the Kaiser to advertise, convincingly, successes in the west when



Photograph by George H. Mewes

RUSSIAN 8-INCH GUNS ADVANCING TO THE POSITIONS every day filled the streets of the capital with refugees fleeing from the east.

RUSSIA AIDS AT THE MARNE AND CALAIS

Ten days before the battle of the Marne the Germans transferred six army corps from the west to the east and Paris was saved. The Germans, utilizing to capacity their wonderful system of railroads, were able to make a concentration of troops in the east which almost annihilated the Russian army in East Prussia. The Russians accepted this disaster with extraordinary complacency on the ground that it was their contribution to the war, and that if they had saved Paris their losses were quite justified.

Later in the fall, when the Germans were making their terrific drive on Calais, in their effort to strike more directly on England, the Grand Duke again launched a new and unexpected campaign on Germany, this time advancing from his base in Warsaw and striking at the enemy from the Polish frontier. Again the Germans were obliged to divert huge bodies of troops to meet this menace of the Russian invasion. By December 1 the Russians had been driven back to the Bzura line outside of Warsaw. It is true that they had suffered reverses, but it had taken sixteen German army corps to drive them back, and Calais was saved!

In 1915, when the one cherished strategic aim of the Germans was to crush either England or France, their program was again upset, this time by the activity of the Russian armies in Galicia and the Bukovina. By the latter part of March the Russians had made such progress in the southwest as vitally to threaten the Hungarian plains, resulting in political chaos in Austria and Hungary. This became such a menace to the whole situation that the Germans were obliged to abandon whatever plans they had in the west and give their immediate attention to backing up the dual monarchy, lest it be seduced from its alliance.

DRAWS HORDES OF GERMANS FROM THE WEST

Beginning in May, the Germans began pouring their troops into Galicia, and for six months there was an unending flow of German divisions and of army corps directed against the Russian front with an extraordinary supply of munitions, while even in men the Russians were outnumbered at strategic points by two or three to one.

The Germans were able to drive through Galicia and bring about the fall of Warsaw in August, 1915. Contrary to their expectations, they were unable to bring about an independent peace, and instead of seeing the collapse of their enemy they beheld the legions of the Tsar slip from out their grasp and retire into the vast spaces of the Empire. From August until October the great retreat continued, until exhaustion and falling morale of the invader made it necessary for the Germans to dig in for the winter.

The Germans claimed that this was the appointed place that they had elected to reach for the winter, but I would state, unequivocally and without fear of contradiction, that the German advance stopped there, not because it wished to, but because it literally was unable to continue the invasion any farther. Any observer who has seen their lines as I have in many places would concur in the belief that no army would elect to spend the winter on a line which ran through forest, swamp, and plain, achieving, for the most part, no strategic asset.

RUSSIA GIVES ENGLAND AND FRANCE OPPORTUNITY TO PREPARE

The world at large looked upon 1915 as a year of Russian defeat, failing to realize that it took between thirty-five and forty corps of German troops, operating in the east, to bring about the Russian disaster. The withdrawal of these corps from the west gave England and France an opportunity to prepare after the war what lack of vision had not done before. When the Germans, in the spring of 1916, sick of their empty advances in the wastes of Russia, attacked the French at Verdun they found them prepared, and their efforts, as the world now knows, to break the French line proved abortive.

By June of 1916, when the Germans were assembling troops for some other strategic aim, Brusilloff launched his of-

Photograph by George H. Mewes

TYPICAL REFUGEES FROM THE BATTLE ZONE RELATING THEIR EXPERIENCES

fensive on the southwestern front, which continued without intermission for seventy days. The capture, during the summer and early fall, of 456,000 prisoners and nearly 500 guns so demoralized the Austrians that whatever plan the Germans may have had for that summer had to be abandoned and supports hurried to Galicia and Volynia to save again the dual monarchy from collapse.

ANOTHER FRONT FOR THE GERMANS TO FACE

This tremendous diversion of troops against the Russians last summer made it possible for the British and the French to commence their blows in the west on the Somme, operations which are still in progress.

By September 1 Germany was again beginning to accumulate a strategic reserve which might have made it possible for her to strike either on the east or west. At this moment Roumania, dazzled by Russian successes, entered the war, and the Germans, again menaced on the east, were obliged to send thirty divisions to the Balkans to drive the Russians out of Roumania. We see, then, that ever since the beginning of the war the pressure of the Russians, directly and indirectly on the east, has robbed the Germans of their strategic opportunities on the west.

Prior to the entrance of Roumania into the war the pro-German alliance in Petrograd had been viewing the situation with the gravest fear. For the first time it was beginning to see the great possibility of defeat. The Tsar, himself a well-meaning and patriotic man, was surrounded by a clique inimical to the Allies, eager to bring about a cessation of hostilities as the only means of preserving their power and prestige in Russia. The removal in the early summer of Sazanov, and every man in the foreign office known to be loyal to the Allies, provided a mechanism for negotiating an independent peace.

SCHEMERS EXPOSE THEIR OWN PLOTS

The little clique who had been engineering this enterprise had been so intent on their own interests that they utterly failed to appreciate the fact that every other faction in Russia saw and clearly realized their aims. The fall of Bucharest gave them their opportunity, but so powerful had become the Duma and the Council of the Empire that the government dared not move openly at that time.

Probably it was felt that the condition in Russia economically would be so desperate in the spring that the people would demand a cessation of the war and little intriguing would be necessary, but when spring arrived with its inevitable unrest, and the Emperor endeavored to dissolve the Duma, there came not the demand for an independent peace, but a demand for the overthrow of the government whose incompetence and double-dealing had brought about the wide-spread suffering and disorders in Russia.

The ease with which this revolution was accomplished was due entirely to the fact that every faction in Russia realized the truth as to the government, learned by thirty months of observation of incompetence and munition shortage, which had resulted in the sacrifice of millions of men at the front, and made manifest at home by the fact that in Russia more than thirteen million refugees were forced to flee for safety to the heart of the Empire because an army had not been given rifles and munitions with which to guard the Russian front.

We now approach the period of the present, when America has elected to enter the world war, and if America would realize what Russia means to this cause it must understand that the Russians at the present time are holding on their eastern front, from the Baltic to the Danube, nearly three million enemy troops, perhaps a million and a half of these being Germans.

WHAT RUSSIA'S ELIMINATION WOULD MEAN

If, by disaster at the front or by intrigue at home, Russia is forced out of the war during the coming summer, we may anticipate the early transfer of a large portion of this vast mass of men to the western front, and we will see the beginning of what in reality is an entirely new war.

We must now consider what is our duty toward ourselves and toward our Allies. The minute a nation by declaration of war engages in hostilities with an enemy nation it becomes the duty of the government and the people of that government to commence striking at that enemy with every means which is at its disposal—moral, financial, economic, and military.

If this country is to be of actual and vital assistance to the Allies who are fighting this war for world democracy and the cause of humanity against the German Government, which represents neither, the first and most essential requirement today in America is the realization on the part of the people of this country that the Germans are not on the point of collapse.

SEEDS OF DISASTER SOWN BY UNDERESTIMATING THE ENEMY

I have been in three countries at the beginning of the war—England, Russia, and Roumania—and in each of these countries the seeds of future disaster, later paid for by the sacrifice of hundreds of thousands of lives, were sown in the belief among the people that the struggle was to be of an approximately short duration, and that it would be unnecessary to exert the entire national effort to defeat the enemy. I heard many Englishmen in the early days of the war express their hesitancy in enlisting for a year's training before going to the front, because they believed the conflict would be over before they ever could reach the fighting line.

In the fall of 1914 the Russian Minister of War had almost ceased ordering ammunition, expressing the opinion that the war would be over before the time of delivery came, while in December of that first year men of highest importance in the Russian Empire labored under the belief that Austria, exhausted by her early sacrifices, was on the point of making an independent peace. Roumania, in September of 1916, believed that the war was practically over.

The result of this general misconception in England was that the mobilization of British resources did not take place until the spring of 1915 and conscription until 1916. In Russia the truth was realized only when the army ran out of supplies early in 1915, when she paid for the lack of vision of her government by the sacrifice of thousands of lives in the great retreat, while Roumania, as the world now knows, has lost three-quarters of her territory as a price for her undue optimism as to the German capacity to continue the war.

FALLACIOUS ARGUMENTS HEARD HERE

In 1917 we hear in America the same fallacious arguments that one has heard for three years in Europe, namely, that Germany is at the end of her resources, and that it is not worth while for individuals to enlist, as the chances are they will never have the opportunity to leave American shores.

The prevalence of this opinion is in reality of the greatest assistance to the Germans, and by the wide-spread belief in this we are actually making the duration of the war infinitely longer. To those who believe that the German Government is about to break on account of the reverse on the western front, I would call attention to the extraordinary psychology of the German people, which is so different from that of all other countries engaged in this war that comparison is impossible.

It is difficult for Americans to realize the discipline and lack of intellectual initiative which exists in the German army and among the German people.

Ever since he became Emperor, Wilhelm has been instilling his extraordinary beliefs into his army and into his people, until today we have a psychology in the Teuton Empire which will probably make it possible for the military autocracy to continue the war to a far greater length than would be conceivable in any other country in the world.

THE PERVERTED TEACHINGS OF THE KAISER

In the early nineties the Kaiser sounded the keynote of his own character and point of view in a speech he made to a regiment in northern Germany, when he said to them: "I would rather see my forty-five million Prussians dead on the field of battle than see one foot of the soil taken in 1870 given back to France."

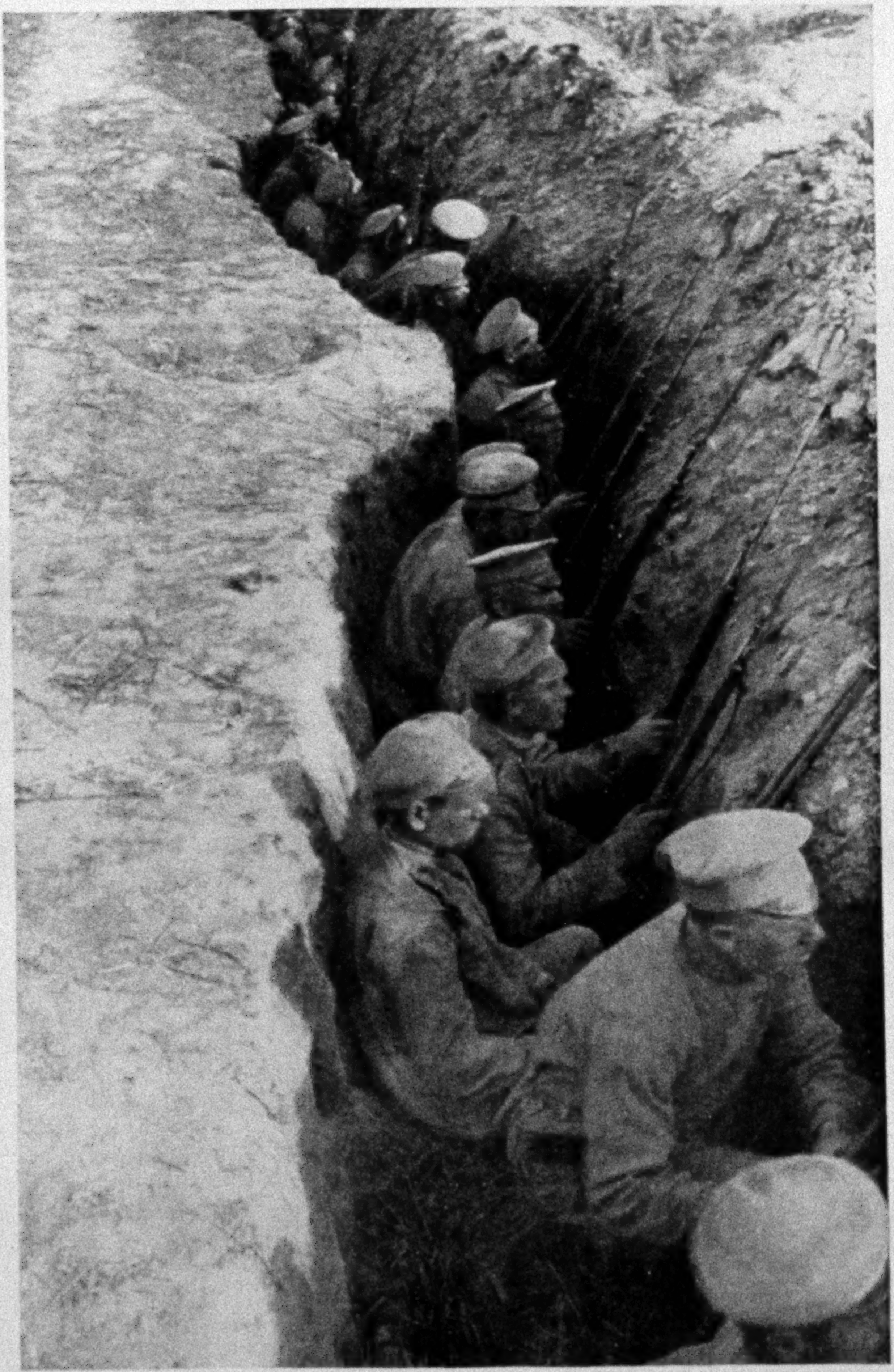
And several years later, in addressing a body of recruits in Potsdam, the Kaiser is reported to have said: "Now that you have donned my uniform it must be your pleasure and your duty to follow my wishes, realizing that I rule Germany by the direct will of God, and you must willingly obey my commands, even though I require you to shoot down your own fathers and brothers in response to my dictates."

With such ideas as these being instilled into the German army and German people year by year, we must not believe that at the first sign of reverse they will forget the teachings of forty years and demand consummation of immediate peace; and we must likewise realize that a revolution in Germany at this time has far less opportunity for success, for there is every probability that the German soldiers would fire upon their own people with the same subservience to their officers that they show in all their military operations.

THE WAR'S END NOT AT HAND

While the military operations in the west are of vast importance to the situation and must unquestionably demoralize the Germans to a certain extent, I see no reason to believe that the events of this month in France have created a condition from which we may expect any immediate results looking toward peace.

When we read that the French and English have taken 33,000 prisoners and 330 guns in the month of April, we must, of course, rejoice; but we must at the same time guard against an optimism which leads to the belief that our only



Photograph by George H. Mewes

RUSSIAN TROOPS AWAITING A GERMAN ATTACK

This is a typical rear-guard trench, characteristic of the field fortifications of the great retreat

Photograph by George H. Mewes

THE STAFF OF THE 5TH SIBERIAN CORPS

The last corps to leave Warsaw and one of the first in action on the southwestern front in the summer of 1916

duty in this war is financial and economic.

These losses of the Germans, while encouraging, are in reality but a drop in the bucket. It might be well to remember that Brusilloff, in a little over two months' operations on the southwestern front in Russia during the summer of 1916, took 450,000 prisoners and 496 guns; and yet this far greater loss to the enemy, as one now realizes, has exerted but transitory influence on the world situation.

In order fully to appreciate the Teuton strength, it is necessary to give the Germans the credit which is their due. One must, I think, consider broadly their whole point of view and realize that the power of the Central Empire, and no one at this time will question its strength, is due to the German virtues and not to the German vices.

Now that the bitterness against the Germans is so intense, it is difficult to wipe away the prejudices one feels and give them the benefit of the extraordinary values which they have as a people; but if we underestimate these virtues, we fail to understand the causes which have made it possible for the Germans to do what they have done.

WHY THE GERMAN WAR MACHINE IS STRONG

Much as I disapprove of the German point of view and of the spirit which has been manifested by the Germans of nearly all classes in this war, I still remain of the opinion that, taken from the internal point of view, our enemies possess almost every virtue which makes for military strength.

In the first place, no one who has seen and talked with the German troops can question the sincerity of their belief in the righteousness of the German cause. I have talked with prisoners from the Baltic to the Bukovina, and I have never yet met one who did not believe implicitly in the statement of the Kaiser, made at the beginning of the war, to the effect that "in the midst of perfect peace we have been treacherously surprised by a ring of enemies jealous of our genius and intent on our destruction."

THE PRUSSIAN CAPACITY FOR SACRIFICE

With this idea dominant in the German mind, and probably now accepted as a truth even by the Kaiser himself, who has come to believe implicitly in his own statements, the fallacies of which his lack of imagination has made him incapable of seeing, there has been produced in Germany a national fortitude and a capacity for sacrifice rarely equaled and never surpassed in the history of the world.

Having spent in the achievement of what they regard as their national defensive aims four and one-half million casualties gross, we need not imagine that the loss of a few hundred thousand in the west is going to exert any fundamental or far-reaching influence on the German ultimate capacity of resistance.

I believe it to be an absolute truth that if America prepares for war with the idea that this conflict is to last for three years we may expect the end of the war before 1918; but if we elect to make the same psychological mistake that the other Powers have made and cling to the belief that the war is almost over, and prepare in the belief that the Germans will be exhausted this year, it is perfectly possible that the war may last for another two years.

HOW WE MAY PROLONG THE WAR

If we raise a trifling army of half a million to a million men, it is quite possible that before this war is over we may suffer a million casualties on the western front alone; whereas if we accept the necessity of sacrifice and prepare ourselves as we would do were we fighting Germany alone and for our national existence, and formulate plans for a three-years war, involving ultimate capacity to deliver on various European fronts five million men, fully equipped and trained, it is my opinion that, with the possible exception of an expeditionary force for moral effect on the situation, none would ever reach a European front.

It must be realized at this time that a dominant feature in the world has become the visible supply of man power. The German staff has carefully analyzed the European situation, has reckoned with this visible supply in Russia, France, and England, and has, to its own satisfaction, reached the conclusion that Germany has a sporting chance of outliving her enemies in this competition of death. The staff has not, at any time, I am certain, included in its figures the possibility of five million Americans being potentially available to fill the losses of the Allies in 1918, 1919, and possibly 1920.

A WHEAT MARKET ANALOGY

In this matter of the visible supply of human material I see a direct analogy in the wheat market. If a Chicago operator contemplates a corner in May or July wheat and learns many months before that the acreage in Argentina is to be increased 200 per cent, his plans are affected and defeated, not when this wheat really comes on the Chicago market, but when he receives information of the contemplated acreage in distant fields of production.

Thus the price of wheat in other ruling markets is affected even before a seed is planted. And so, I believe, it is with this military situation. If our plans contemplate the raising of an army of five million men within a certain period, the Germans feel the military and moral effect before we have enlisted the men; for it means that a staff already desperately pressed to provide men for this year's campaign must extend its vision to contemplate the possibility of raising in 1918, for delivery at the same time and place, approximately an equivalent number of troops as contemplated in our military program.

THIS YEAR OR NEVER WITH THE GERMANS

The realization of this potential situation must convince the enemy that what they cannot accomplish during this summer they can never accomplish, and the necessity of peace late in the fall or early winter must be apparent to even the frozen imagination of the German people. It is for this reason that I believe our second fundamental duty is the adoption of a military program on the basis of three years of war.

The third fundamental and, in my opinion, the most necessary action which this country should take is that which our President and government are already taking in the support of the new provisional government in Russia. Inasmuch as we cannot at present strike the enemy with any military force of our own, we must strike by assisting, to the greatest extent possible, that member of the Allies who is in the greatest need of assistance.

It must be evident now that the Germans have lost for the present the possibility of achieving any objective in the west which might bring them peace. It is clear, then, that they must turn their minds toward the adjustment of peace with Russia; for, if this end can be obtained, between two and three million available troops would be released for operations in the west, and an access to food supplies and raw materials in Russia would largely neutralize the effectiveness of the British blockade and give the Germans the capacity to fight indefinitely.

DANGERS OF A TEUTON DRIVE ON PETROGRAD

While I am not a pessimist as to the situation in Russia, I am certainly of the opinion that it is more than a military possibility for the Germans to take Petrograd between now and the first of September.

Were they to do this, they would strike a terrific moral blow at the Empire and an equally heavy economic one by the capture of the greatest munition and manufacturing base in Russia. At the same time they would isolate the Russian fleet in the Baltic and threaten potentially the lines of communication between England and Russia, throwing a terrific burden on the Trans-Siberian Railroad.

There is no question but that the present provisional government in Russia is composed of the most far-seeing and patriotic men of the nation. Perhaps no revolution in history has produced a finer group of patriots than this Russian twelve; but we in America must not expect the impossible, even from these distinguished and highly intelligent gentlemen.

In the face of military disaster, the possibility of which we must recognize, and the loss of the capital, whose security we must not too certainly depend upon, and with the ammunition and supplies from the outside threatened, if not cut off, we must discount the possibility of an extremely dangerous situation in the east during the coming summer.

We must always count on German intrigue exerting malevolent influence in Russia whenever the news from the front is in the least bit pessimistic. It is for the reason mentioned above that I believe our President has shown great wisdom and foresight in giving his immediate attention to the Russian situation in preference to any other of the Allies at the present time.

NO DOUBT AS TO THE WAR'S OUTCOME

As to the ultimate outcome of the war there is, of course, not the slightest doubt in my mind, nor has there ever been. The only danger was as to whether or not Germany's material preparations would be able to crush the Allies before the character of their people had had time to crystallize and prepare itself first for defense and then for offensive operations.

With nations as with individuals, it is character that is the ultimate test. Forty-two centimeter guns are worn out, munitions are shot away, and food supplies are eaten up, but the moral character of the people remains the one enduring asset which makes sacrifice possible and victory assured.

The American Revolution was won, not at Yorktown, but at Lexington, when it became apparent for the first time what was the fiber of the American people; and so this war was won when it became evident that the people of France, of England, and of Russia preferred sacrifice and death to defeat.

That all these sacrifices are justified those who have followed the situation closely cannot doubt.

I am personally of the opinion that an enduring moral idea is the greatest inheritance which one generation can leave to its successor.

The establishment of the democratic idea, based on morals, ethics, equity, and justice, which must come from this war, is worth, not a million or ten million casualties, but fifty million, if from this struggle there emerge an enduring conception as to the fundamental basis on which society, progress, and civilization must rest in perpetuity.

Photo White

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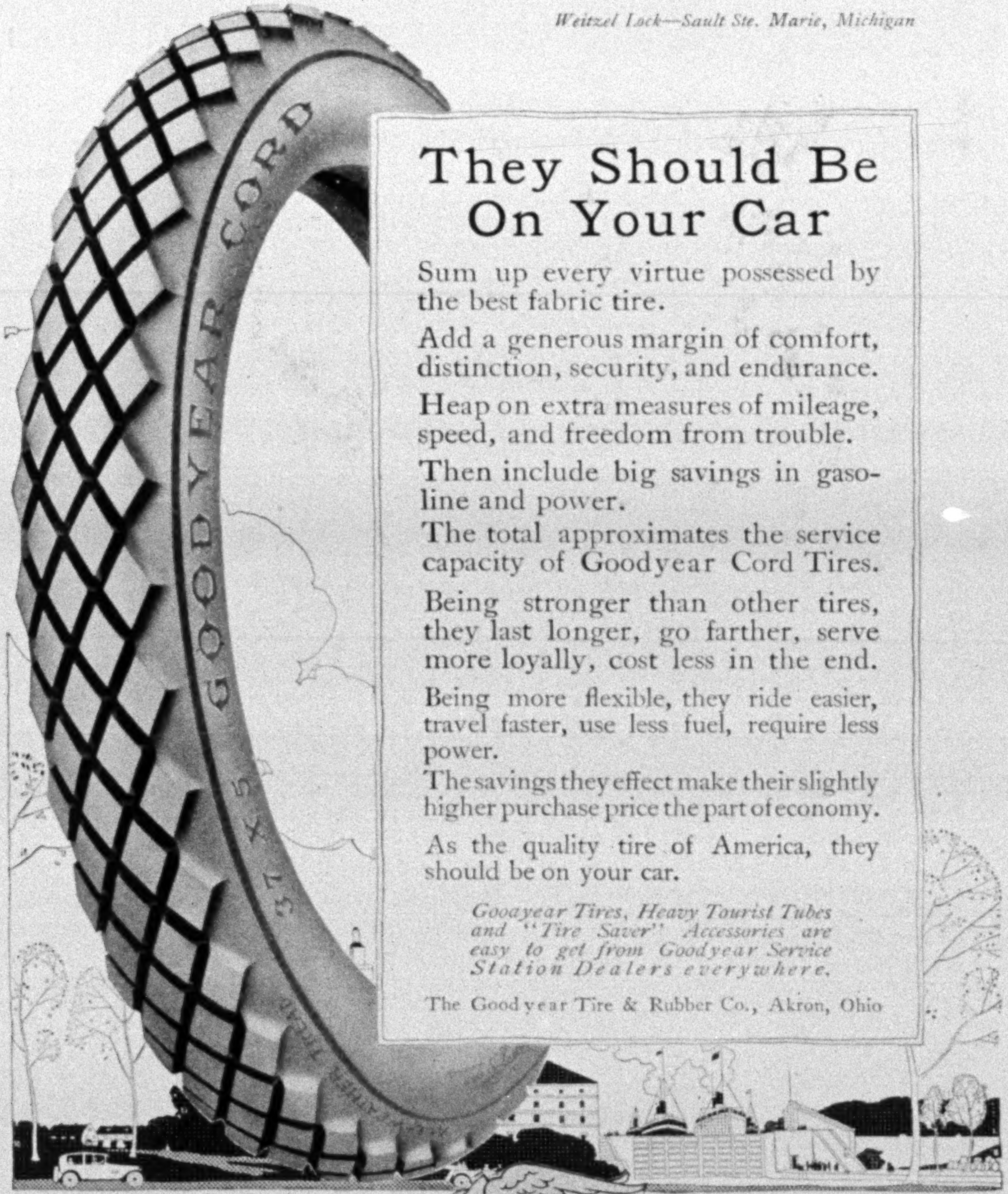

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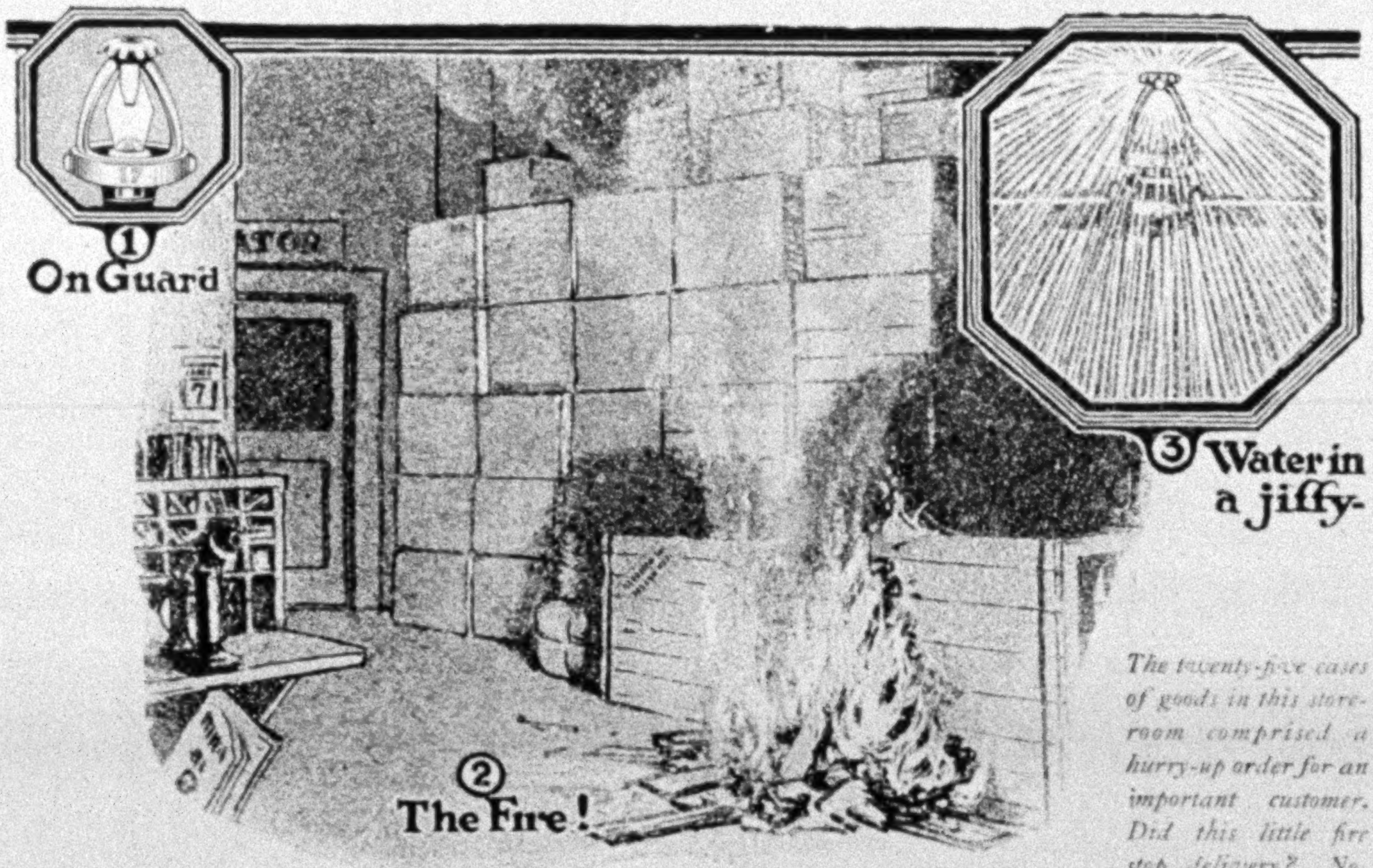

The twenty-five cases of goods in this storeroom comprised a hurry-up order for an important customer. Did this little fire stop delivery? No.

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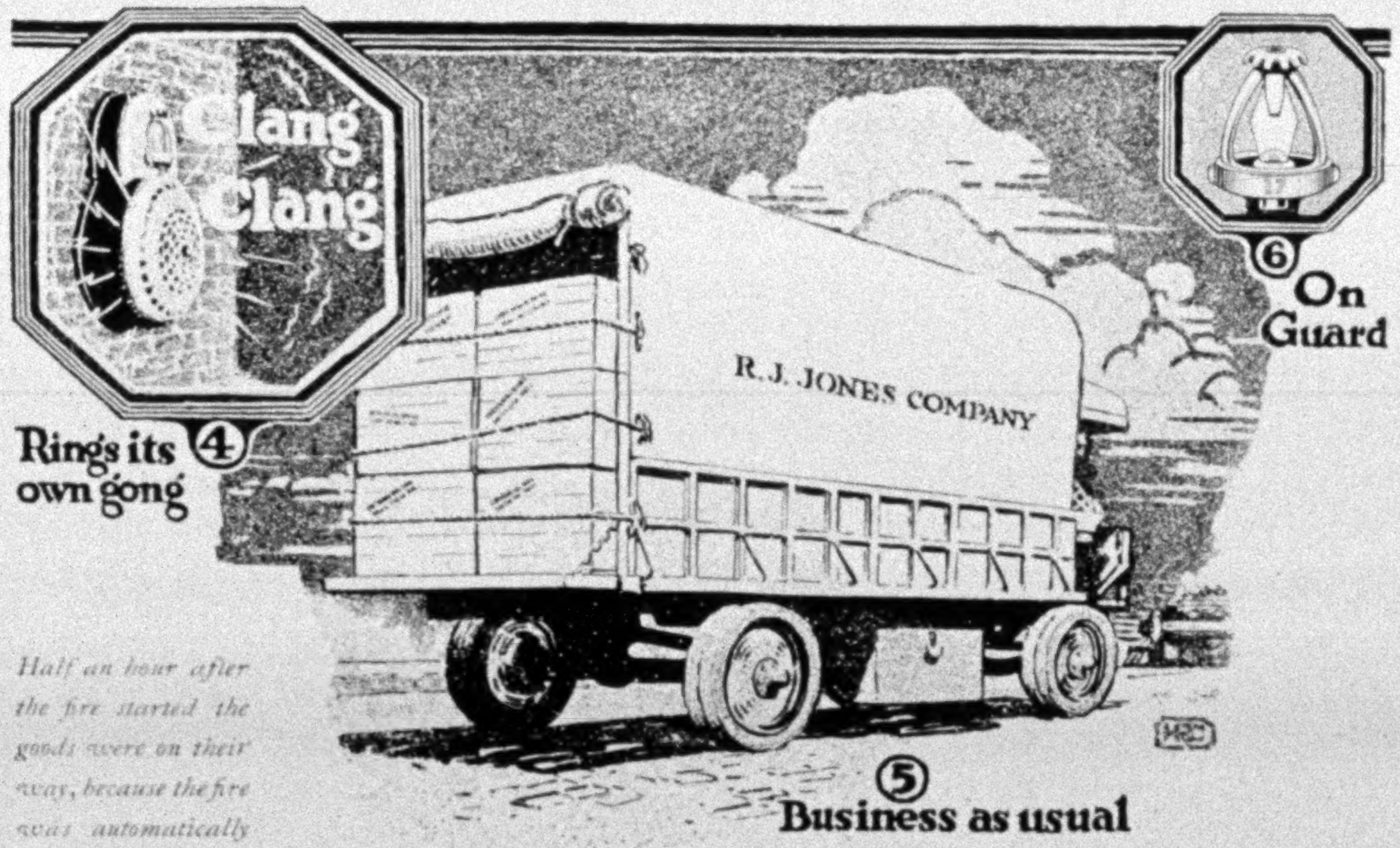
A business safeguarded by Grinnells is considered so thoroughly safe by the insurance companies that the insurance rate is cut away down as soon as the system is in



Half an hour after the fire started the goods were on their way, because the fire was automatically put out by Grinnells.

operative condition. That tells the story of diminished hazard.

Not being an insurance expert, you may think, "Oh, there's not much chance of a big fire in my place!" But the insurance rate, based on statistics, tells the unwelcome truth about it.

So do thousands of business fires a year.

Don't stick your head in the sands of self-complacency! Your business will never be safe until it is protected by automatic sprinklers.

Fireproof construction? That won't save you. Coal will burn in a fireproof grate, and, likewise, your business will burn in a concrete cage.

Sprinklers rank far ahead of fireproof construction as rate-reducers on everything inside a building.

A sprinkler system is a large and important investment, and when once installed can never be economically changed for another kind.

Play safe, therefore, and buy the standard system, the Grinnell. It protects more property than all other sprinkler systems put together and is assembled to order in our plants, which are the largest and best equipped of their kind in the world. The system, therefore, comes to you complete except for a few last connections, and you can rest assured that it is the best, because it has behind it a big six-million-dollar corporation, with over thirty-four years' experience in the art of automatic fire-protection.

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We publish a blank form which we will be glad to send to you without charge. It is called the Grinnell Exemption blank because it is the first step toward gaining *exemption* from the high cost of insurance. Thousands of business men have been exempted from a large part of their insurance "tax" by the underwriters as a result of taking this easy first step. When you fill it out with the facts that are called for, we can tell you something pretty definite about what Grinnells will do for you.

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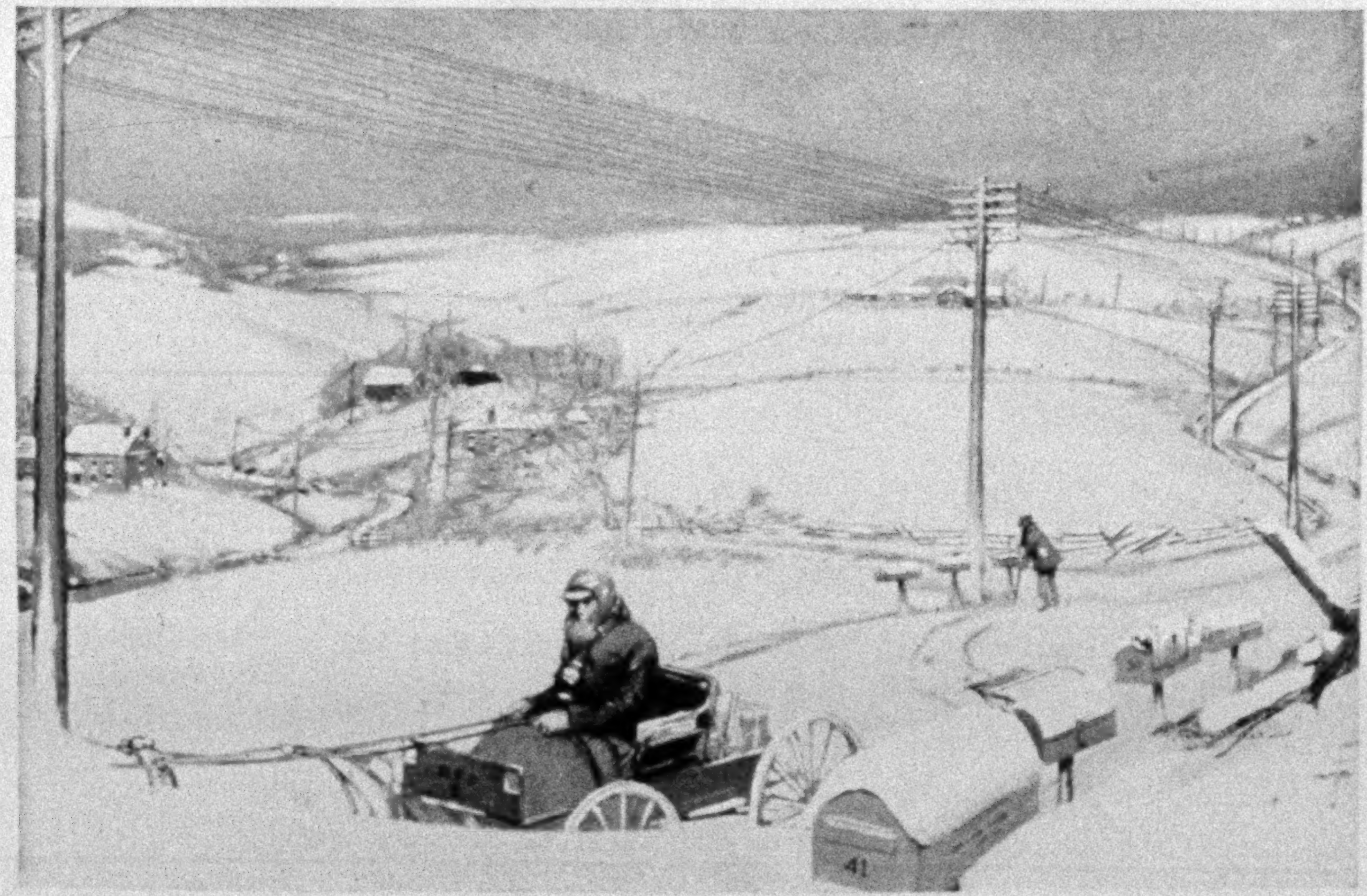
"AT THE END OF THE TRAIL."
Frazser's Statue, to be erected at the western end of the Lincoln Highway.



Standards of Service

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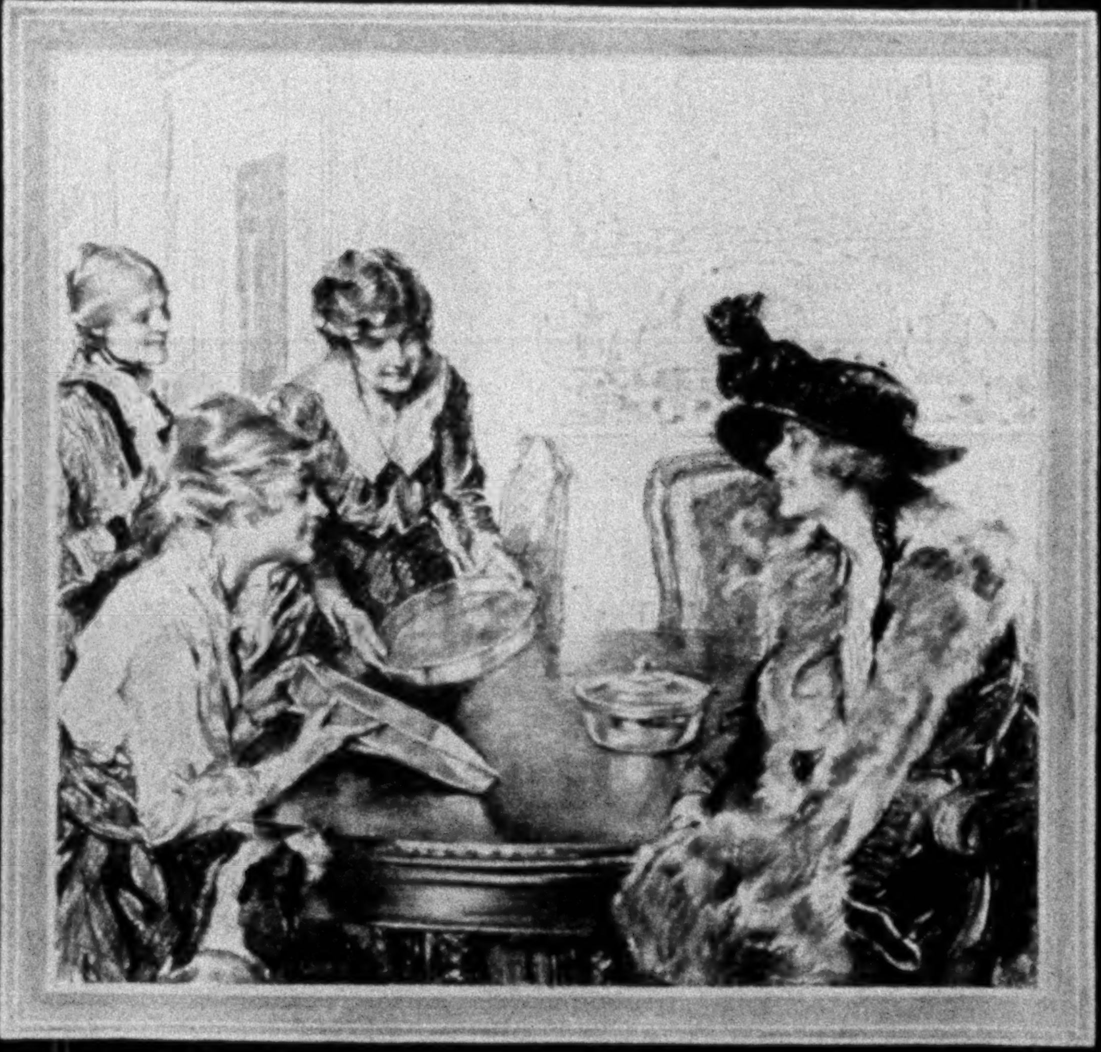
AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*

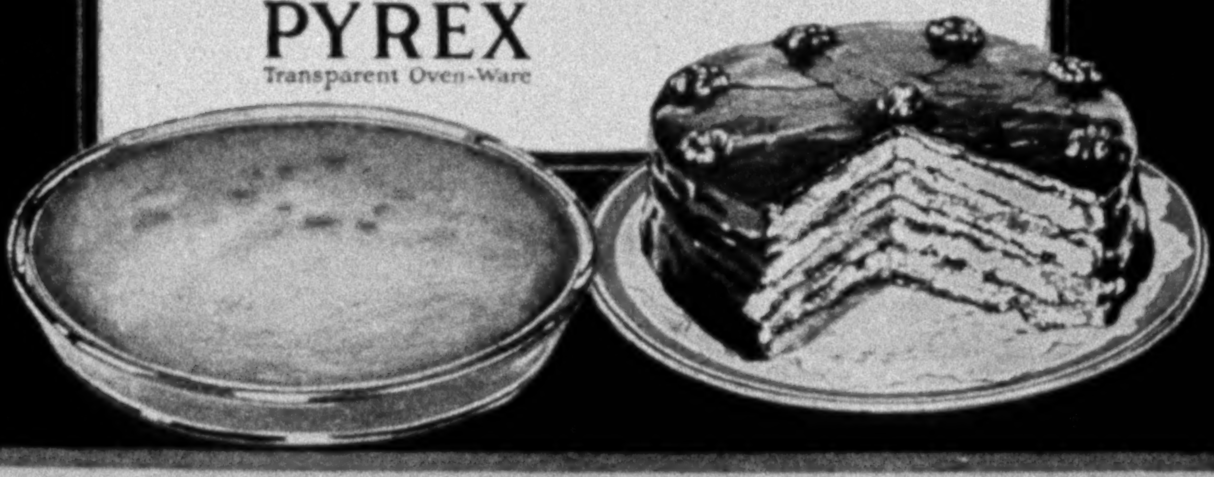


Really attractive dishes to serve in–Direct from the Oven!

All women today welcome enthusiastically Pyrex, the transparent oven-ware, at once dainty, lasting and *so* clean! Pyrex actually *bakes better*. It has the quality of absorbing and retaining heat to a remarkable degree and foods cooked in it retain their full value. Use it for all sorts of oven cooking.

Dealers in housewares everywhere sell Pyrex. Prices, 15c to $2.00. Ask your dealer for booklet. Corning Glass Works, 111 Tioga Avenue, Corning, New York.

PYREX
Transparent Oven-Ware



DODGE BROTHERS

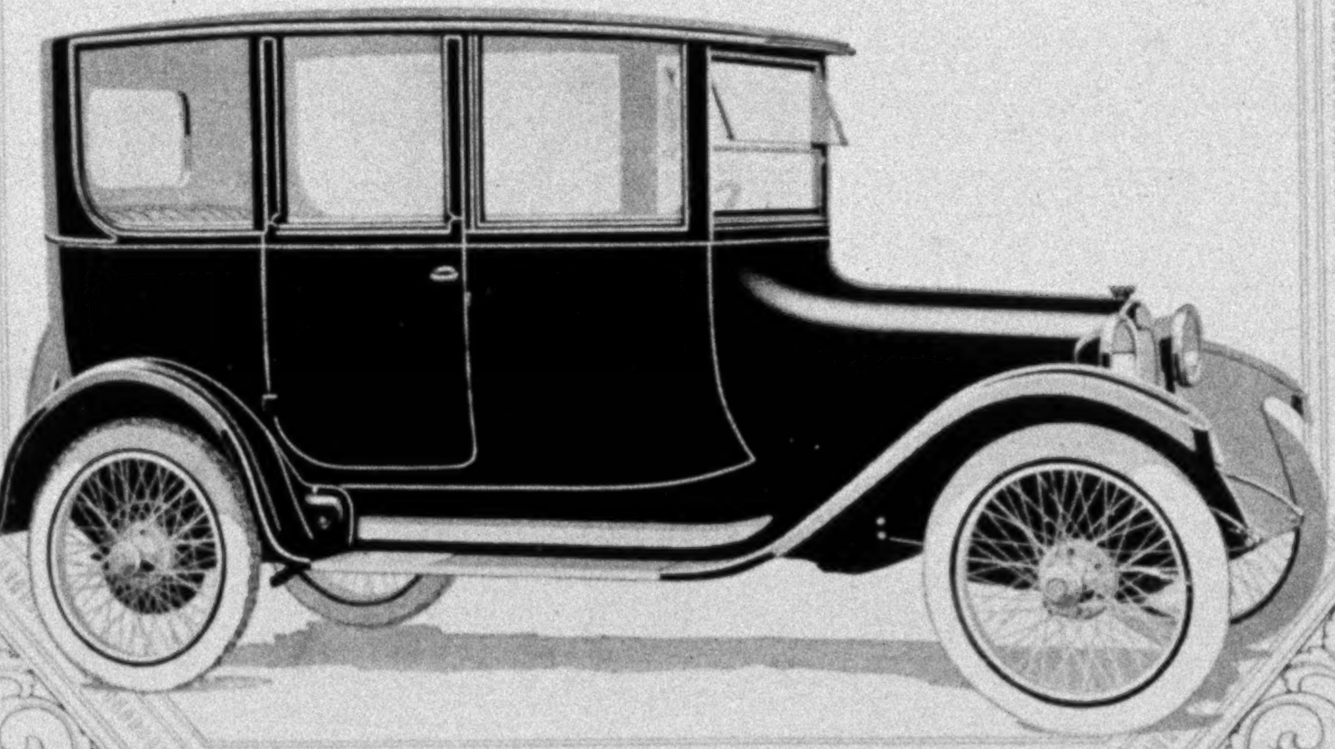
CLOSED CAR

The number of those who prefer the Sedan for use throughout the year is steadily increasing.

The reason is easily understood when you consider how adaptable it is to the frequent weather changes common to all parts of the country. Almost instantly it can be changed to accommodate itself to heat or cold, rain or shine.

Touring Car or Roadster, $835. In Canada, $1185
Winter Touring Car or Roadster, $1000. In Canada, $1420
Sedan or Coupe, $1265. In Canada, $1800
All prices f. o. b. Detroit

DODGE BROTHERS, DETROIT



Great corporation head is amazed at the skill & devotion of Davey Tree Surgeons

Correspondence between W. W. Salmon, President of the General Railway Signal Company, and M. L. Davey, General Manager of the Davey Organization—a message of vital importance to every owner of trees.

GENERAL RAILWAY SIGNAL COMPANY
Principal Office:
Rochester, N. Y., U. S. A.

W. W. Salmon, President.

New York City, Sept. 29, 1916.

Mr. M. L. Davey, Davey Tree Expert Co., Kent, Ohio.
Dear Mr. Davey:

Enclosed herewith please find my check to your order for $1,081.33 in full for tree surgery on my property at Beechmont, New Rochelle.

In making this remittance permit me to express my appreciation of the *capable, interested service* rendered by your organization. Your New York Office as well as your Westchester representative and your foreman, *have one and all given the most painstaking attention to my needs, and I have been so much impressed with the efficiency of your organization as I have come in contact with it*, that it would please me greatly if, when you can find time, you will have the goodness to *furnish me with any data* at your command, showing *how you have built up and maintained it* in such a way *as to bring about the devotion and enterprise* so evident in your representatives whom it has been my pleasure to meet.

Yours very truly,
W. W. Salmon.

Kent, Ohio, Oct. 3, 1916.

W. W. Salmon, Esq., "Beechmont," New Rochelle, N. Y.
Dear Mr. Salmon:

Acknowledging your esteemed favor of Sept. 29th, I want to assure you that such a voluntary expression of satisfaction is more than a pleasure—it is an inspiration. The public as a whole has been very gracious to us in return for our conscientious efforts to give Quality First Tree Surgery and honest service.

I believe that most worthy things, especially along the line of organization, are the result of evolution based upon a fundamental policy. *Our purpose from the beginning has been to give maximum service, which means perfected methods, high type men and an organization ideal.*

Perhaps the thing of first importance is the men—the men who actually do the work. The people whom we serve are not particularly interested in my theories or my knowledge or my ability. They measure the Davey organization by the men whom they see, and rightly so. Consequently, we have endeavored to get the right kind of men.

We go on the theory that "A leopard cannot change his spots." If a man is dishonest, if he is lazy, if he is careless and indifferent, if he lacks intelligence, if he lacks the spirit of co-operation and devotion to his work and his employers—if he lacks these fundamental things, no argument and no appeal and no inducement will make him a good man. *We, therefore, eliminate the poor ones as fast as we find them, keeping only those who have in them the qualities which have impressed you.* The good ones we boost and encourage and try to inspire as soon as we find that they are good. We pay these good men well and pay them more as soon as they prove they are worth more. The foreman who had charge of your work will be given a raise immediately on the strength of your letter. Is it not reasonable to suppose that he will strive still harder to please every other client? *Every man in the Davey organization knows that his advancement depends upon his service and upon no other thing.*

While we pay well we demand much in return. If a man fails to live up to our high standard, we do not want him and will not have him. *If our service at any time falls below this high standard, we let the offender go and make good to the client.* Thus the process of elimination leaves us the good men, those who are intelligent, industrious, honest and devoted to their work.

Our men are all trained in the Davey organization. We take no man's recommendation of himself. He must go through the mill and show us. Every man is responsible to us for his work and his conduct, which is the measure of his service. *Thus the client gets, through us, the highest possible service—guaranteed service. We, who know values in Tree Surgery, select the man who is to handle your priceless trees and we stand back of it with the whole strength of our organization and reputation.*

We have devoted ourselves unceasingly to the perfection of our methods, with the result that our work is in reality practically perfect both mechanically and scientifically. We maintain our own school at a considerable annual expense for the specific purpose of training our men according to the Davey methods and Davey standard.

Every year we have a Convention, when we bring all of our responsible men together, including foremen, special representatives, officers, students and school faculty. *We had our usual Convention last March. We had more than sixty foremen in attendance. The average length of their experience was about five years, with the result that more than three hundred years of actual experience was concentrated, massed, on the problems of Tree Surgery.* We had a week's demonstration work, during which time we discussed everything from the most important down to the seemingly trivial things. *Everything was put to the test of experience. We wanted no theories. We demanded only the definite results of ripe experience. The result is not only a constantly rising standard, but a very gratifying and valuable uniformity of methods and policy.*

We had with us during our last annual Convention, *Dr. H. D. House, New York State Botanist,* who was formerly Professor in the Biltmore Forestry School. We wanted him here so that he could look us over. *He expressed himself as amazed at the character of our organization and said that he could now understand why we had made a success of our work.* Among other

**From Mr. Wm. M. Wood, Pres.
Am. Woolen Co., Boston, Mass.**

"Your work upon my trees bears the mark of expert knowledge, and I am looking forward confidently to the best possible results from your intelligent treatment. Your success in tree preservation makes you a real public benefactor."

**From Mr. G. M. Palmer, Pres.
Hubbard Milling Co.,
Mankato, Minn.**

"I was very much pleased with the work of your men on my trees. They seem to understand thoroughly their business and I am sure they have put my trees in first class condition."

**From Mr. W. H. Mullins, Pres.
The W. H. Mullins Co., Salem, O.**

"The work done by your men on my trees has been very satisfactory and I hope will be the means of prolonging their life for many years."

**From Mr. Ezra F. Hershey,
Hershey Chocolate Co.
Hershey, Penn.**

"It is a pleasure to me, and I feel it a duty, to recommend any work that is done as intelligently as you handled my work here."

Davey Tree

FOR *SAFE* TREE SURGERY

things he said, "These men would do honor to any institution of learning in America." A thing which greatly impressed him was the fact that our men, these fellows of broad, practical experience, were absolutely unanimous on every vital point.

Then there is the question of organization spirit. Our men have been made to feel that they are engaged in a great work—a work which is altogether worthy of them and the best that is in them. They have been made to realize that their future success is inseparably interwoven with the future and the success of the Davey organization. We have appealed to their self-interest, their desire for success and for financial return. *We have shown them that there is only one way for them to advance their self-interest and that is to give devoted service to their Company and its clients.* Without the right kind of men such an appeal would be as wasted as a single rain on a desert. With the right kind of men as we have, such an appeal finds ready response, which grows and grows in beauty and in practical utility.

You as a business man know the inspiration which comes from definite achievement, from approaching a fixed goal. I find more satisfaction in this achievement than in the profit which comes from it. *I believe that a business ideal is a source of power and serves to draw success as a magnet.*

Ten years ago the Davey organization was only a mere handful doing a business of about ten or twelve thousand dollars per year. Today we have an organization of about three hundred built along the lines which I have indicated. *Our business this year will exceed three hundred thousand dollars and I am very glad to say it leaves in its wake an almost general feeling of satisfaction such as you have expressed.*

Let me assure you that we very deeply appreciate the opportunity of serving you and the honor of your full confidence and esteem.

Sincerely yours,
THE DAVEY TREE EXPERT CO.
M. L. Davey, General Manager.

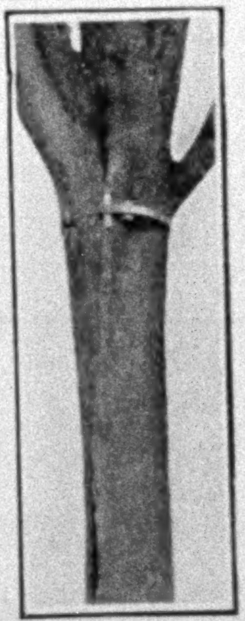


Fig. 1

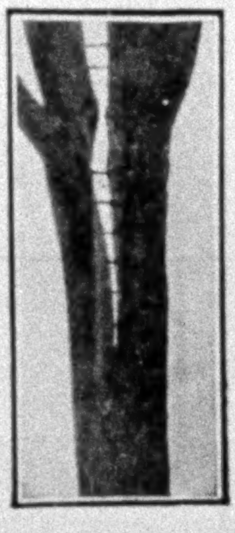


Fig. 2

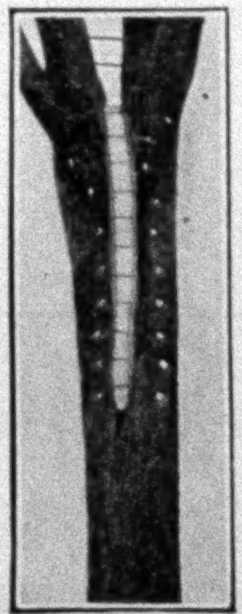


Fig. 3

Fig. 1.—See the iron band around the trunk. The tree was splitting apart and a "tree patcher" tried to save it. Temporarily it prevented a catastrophe, but the band was stranging the bark. And the real trouble, which was the decay on the inside, had received no attention whatever and the condition was growing rapidly worse.

Fig. 2.—Davey Tree Surgeons got at the real trouble. They first tied the branches together with ropes to prevent accident while operating. The decay was removed to the last particle, the inside of the cavity was thoroughly sterilized and waterproofed. The mechanical bracing employed demonstrates the finished skill and complete mastery of Davey Tree Surgeons.

Fig. 3.—The filling of a crotch cavity is probably the most trying task confronted by a Tree Surgeon. The filling is subjected to tremendous twisting and strain; it must not only be held firmly in place by the most expert mechanical bracing, but it must also allow for the normal sway of the tree. The sectional filling method aids wonderfully in this accomplishment, but correct mechanical bracing is ultra-important.

Rochester, N. Y., Nov. 17, 1916.

Mr. M. L. Davey, General Manager,
The Davey Tree Expert Co., Kent, Ohio.

Dear Mr. Davey:

Please accept my sincere thanks for your most illuminating letter of October 3rd.

Your story, interesting in itself, is most admirably told, though in its telling it appears to me that you have failed to mention the one element without which the "perfected methods, high type men and organization ideal" would not have come into being. That unnamed element I suspect to have been Davey, who first conceived the ideal, then determined the methods and later found and inspired with some part of his own enthusiasm the men who are actually carrying out the work.

Shortly after receiving your letter I read it to the department heads of the General Railway Signal Company, while at luncheon, and the interesting discussion that followed led me to show the letter to some of my business friends, who are at the head of companies employing a great many men. In each such instance I have been asked for a copy of the letter—in order that they may have their men read and profit by it.

Will you have the goodness to write me at my home address whether I have your consent to make and send out to my business friends such copies?

Sincerely yours,
W. W. Salmon.

Write today for FREE examination of your trees

—and booklet, "When Your Trees Need the Tree Surgeon." What is the real condition of your trees? Only the experienced Tree Surgeon can tell you fully and definitely. Without cost or obligation to you, a Davey Tree Surgeon will visit your place, and render an honest verdict regarding their condition and needs. Write today.

The Davey Tree Expert Co., Inc.

1505 Elm St., Kent, Ohio
(Operating the Davey Institute of Tree Surgery)

Branch Offices with telephone connections:
225 Fifth Ave., New York
2017 Land Title Bldg., Philadelphia
450 McCormick Bldg., Chicago

Permanent representatives located at Boston, Newport, Lenox, Hartford, Stamford, Albany, Poughkeepsie, White Plains, Jamaica, L. I., Morristown, N. J., Philadelphia, Harrisburg, Baltimore, Washington, Buffalo, Pittsburgh, Cleveland, Detroit, Cincinnati, Louisville, Chicago, Milwaukee, Minneapolis, St. Louis, Kansas City. Canadian Address, 81 St. Peter St., Quebec.

From Mr. Henry A. Everett, Pres.
Northern Ohio Traction & Light Co.
Cleveland, Ohio

"It is now six years since you first treated my trees at Willoughby and I am more than satisfied with results."

From Mr. Samuel G. Allen, Pres.
Franklin Railway Supply Co.
New York.

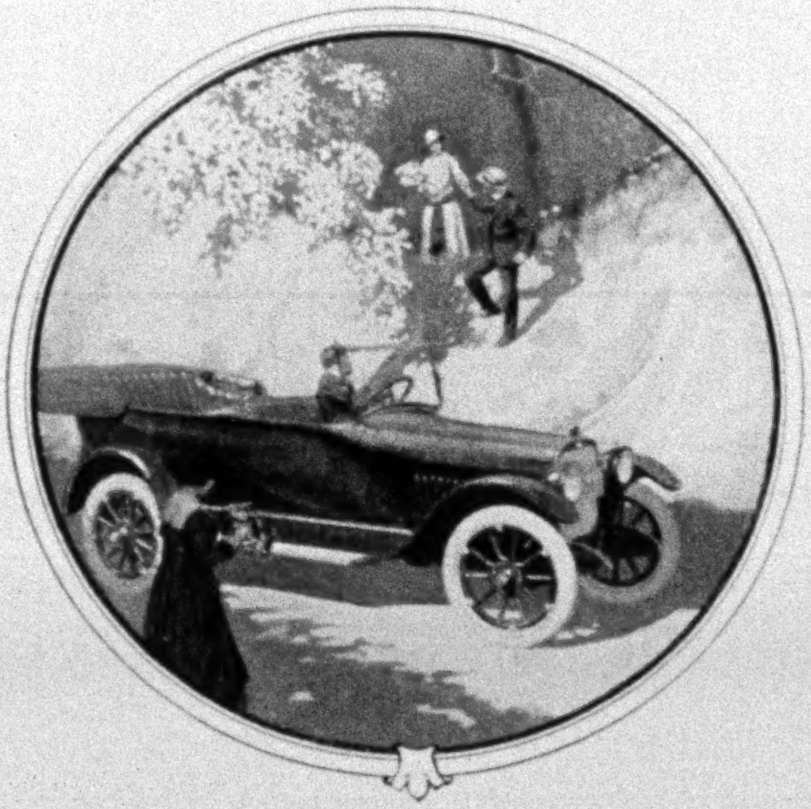
"The work of your representatives on my place at Fair Haven is exceedingly satisfactory. I found your foreman not only a very capable operator but a very courteous and polite little gentleman."

Surgeons

Every real Davey Tree Surgeon is in the employ of the Davey Tree Expert Company and the public is cautioned against those falsely representing themselves.

JOHN DAVEY
FATHER of TREE SURGERY

CHANDLER SIX $1395



THE CHANDLER CHECKS

With High-Priced Cars

CHANDLER checks in the most essential features of design and construction and equipment with the high-priced cars. Chandler *performs* with the high-priced cars.

The manufacturer of one Six can make just as big *claims* as any other. The Chandler Company likes to deal in facts.

For years the Chandler Company has made the Chandler a *fact*-car, not a *claim*-car. Claims sell a lot of cars, but facts sell *more* cars, just as fast as the buyers learn the facts.

The Chandler is honestly built and moderately priced. There is no other Six, selling at anything like the Chandler price, which will give you *so much* dependable service.

Thousands of motor-car buyers recognize the mechanical superiority of the Chandler Six, mechanical superiority achieved through the Marvelous Motor—the *exclusive* Chandler Motor, powerful, flexible, simple, and economical—and through the excellence of design and construction of the entire Chandler chassis.

So many recognize its superiority that the Chandler has earned a front rank position in the industry. So many recognize it that twenty-five thousand buyers this year will choose the Chandler as the Six to be preferred above all Sixes.

FIVE PLEASING TYPES OF BODY

Seven-Passenger Touring Car, $1395

Four-Passenger Roadster, $1395 *Seven-Passenger Convertible Sedan, $2095*

Four-Passenger Convertible Coupe, $1995 *Limousine, $2695*

All prices F. O. B. Cleveland

Write us today for catalog and booklet, "See How the Chandler Checks with High-Priced Cars." This booklet tells how *other* medium-priced sixes *do not* check with high-priced cars. Write today, and see your dealer. Address Dept. O

CHANDLER MOTOR CAR COMPANY

New York Office: 1790 Broadway CLEVELAND, OHIO Cable Address: "Chanmotor"

"Mention the Geographic—It identifies you."

Fair List Prices — G TRADE-MARK — Fair Treatment

GOODRICH SILVERTOWN *Cord Tires*

LOOK THEIR ARISTOCRACY

TIRE of *royal pedigree* is Silvertown.

Look down into it where its sinewy *two-ply* cable-cord structure is laid bare, and you will see why the Silvertown, marked with the *Red Double Diamond*, is a tire apart.

Inside and *outside* Silvertown looks its aristocratic lineage.

You see its aristocracy INSIDE in that exclusive *cross*-wrapped body, the patent-protected, *rubber-saturated* foundation of a tire, which conquers the *great destroyer* of tires—*internal heat*.

You see it OUTSIDE in the *extra-size* of the tire.

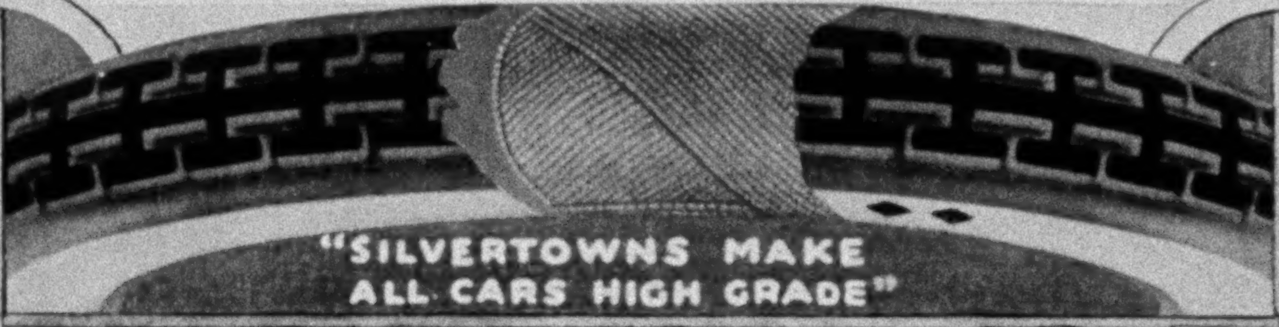
Out of its inimitable making come a *gasoline-saving* economy, a *smoother-riding* comfort, a *greater-mileage*, you can not afford to be without.

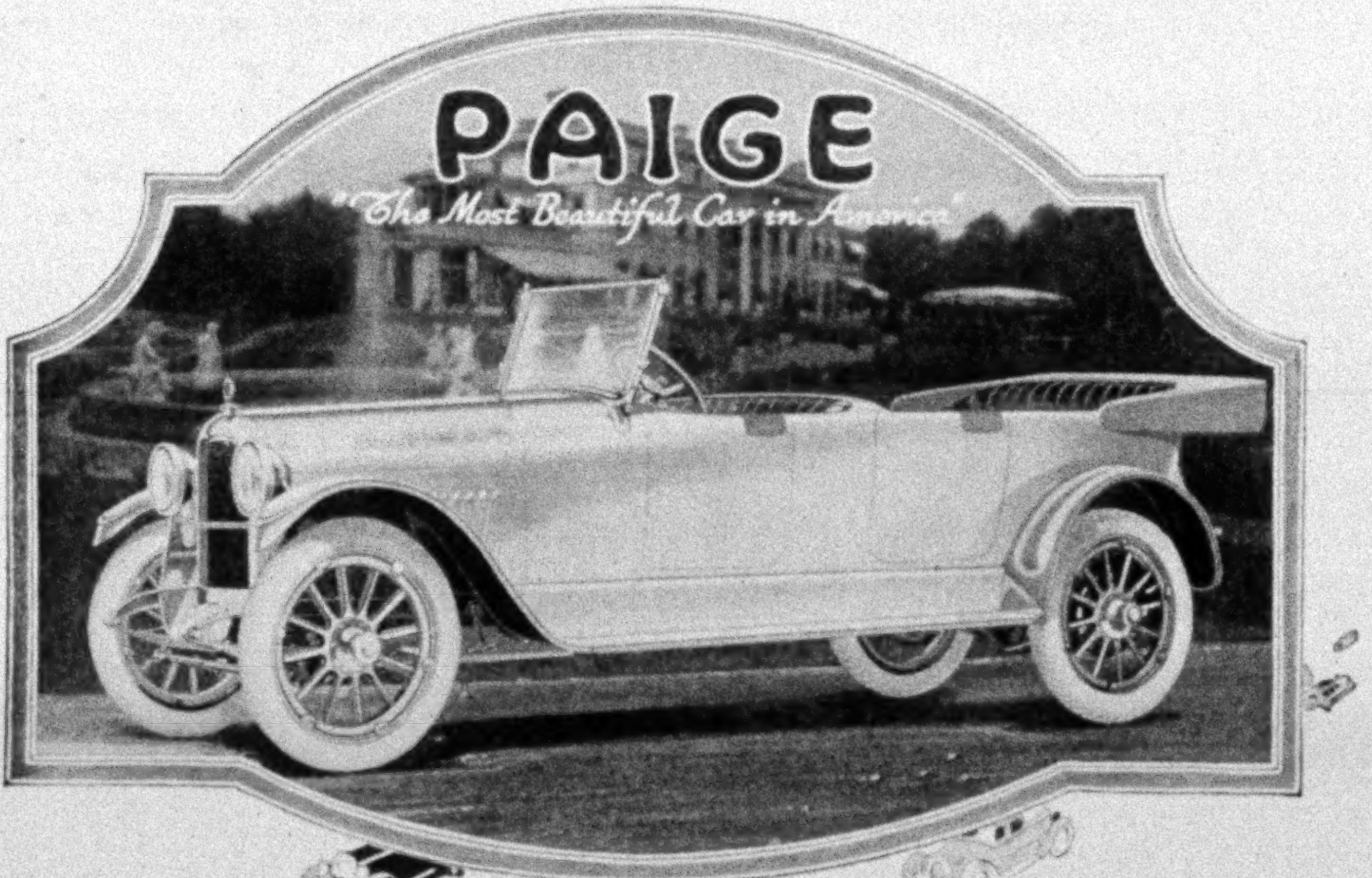
THE B. F. GOODRICH RUBBER CO., *Akron, Ohio*

Also maker of the famous fabric Tires—
Goodrich Black Safety Treads

Ten Silvertown Cord X-cels:

1. Increased engine power.
2. Smoother riding.
3. Fuel saving.
4. Speedier.
5. Coast farther.
6. Start quicker.
7. Easier to guide.
8. Give greater mileage.
9. More resistive against puncture.
10. Repaired *easily* and *permanently*.




PAIGE
"The Most Beautiful Car in America"

The Friends of "The Most Beautiful Car in America"

Talk for ten minutes with any man who owns a Paige car. You then will realize that the most priceless assets of this company do not appear on our financial statement as "Bills Receivable" or "Plants and Machinery."

The *loyalty* of our owners; the implicit *confidence* of our owners; the warm *friendship* of our owners—these are the things that have made the Paige Company what it is today.

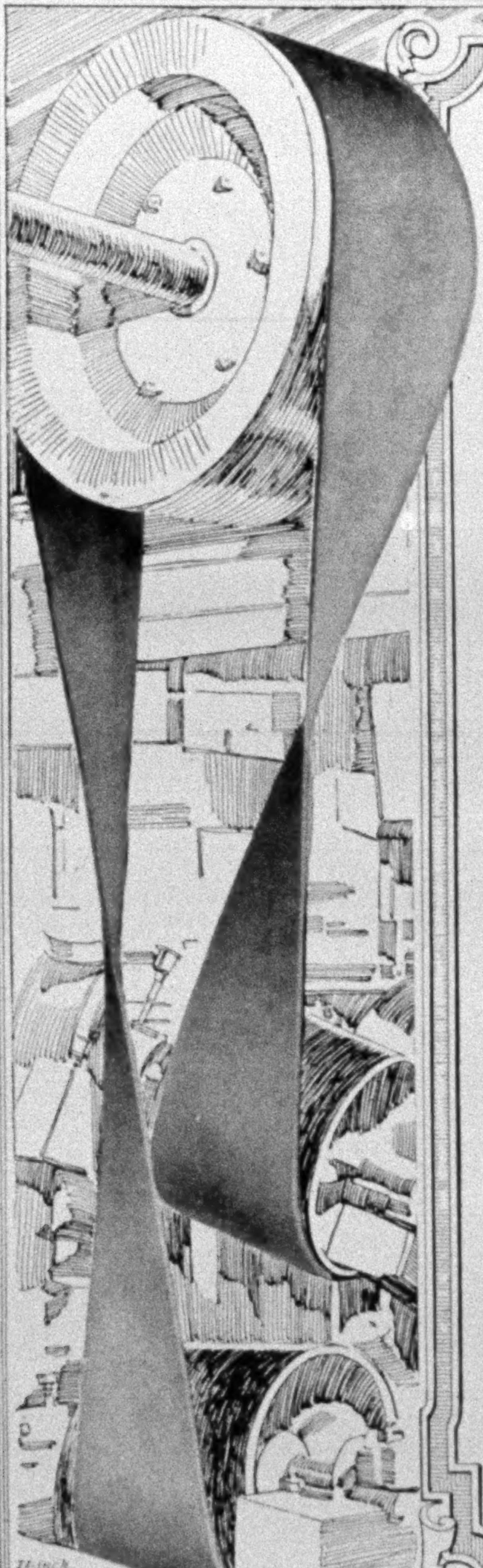
These are the assets that money cannot buy. These are the assets that fire and flood cannot destroy. These are the assets that have built an impregnable bulwark of Reputation and Prestige around the name Paige.

Call them intangible, if you will, yet these are the things that have made *possible* "The Most Beautiful Car in America."

Stratford "Six-51," seven-passenger -	$1495 f.o.b. Detroit
Fairfield "Six-46," seven-passenger -	$1375 f.o.b. Detroit
Linwood "Six-39," five-passenger -	$1175 f.o.b. Detroit
Brooklands "Six-51," four-passenger -	$1695 f.o.b. Detroit
Dartmoor "Six-39," 2 or 3-passenger -	$1175 f.o.b. Detroit

Complete line of enclosed cars

Paige-Detroit Motor Car Company, Detroit, Mich.



11-inch Graton & Knight Quarter-turn Drive in the Donovan Lumber Co. Aberdeen, Wash.

GRATON & KNIGHT
Standardized Series
LEATHER BELTING

Tanned by us for belting use

Graton & Knight Leather Belts are uniform—

Because Graton & Knight are the largest belt makers, because they purchase and tan 285,000 hides a year, because their brands are selected and graded to the highest degree of uniformity from this enormous supply of raw material.

Uniformity is the most important factor in belting quality. A belt, like a chain, is no better than its poorest piece.

* * *

Only a big firm like Graton & Knight could establish and maintain an equal degree of uniformity in its belting.

And Graton & Knight are the largest leather-belt makers in America.

This minute control of uniformity is possible only because of their large supply of leather tanned by them for belting use. A smaller supply would prove a constant temptation to put dissimilar pieces of leather into the same belt.

Graton & Knight hides are tanned in the Graton & Knight tannery, especially for belting purposes, by processes perfected in 53 years of belting tannage. It would be impossible for them to maintain equal uniformity if they used several different tannages.

Finally, Graton & Knight in the manufacture of their by-products use bellies, shoulders, and other parts of hides not suited for belting—there is no temptation to include these in their belting.

* * *

This is why Graton & Knight can make a complete and standardized series of leather belting, and maintain so high and so fixed a degree of uniformity in each brand.

It is why Graton & Knight First Quality *means* first quality—absolutely free from any mixture of seconds, shoulders, or worse.

Write today for the Graton & Knight Belting Book—or have the nearest Graton & Knight representative call on you.

The Graton & Knight Mfg. Company

Oak Leather Tanners, Makers of Leather Belting, Leather Packing, Leather Sundries and Specialties, Counters and Soles.

Worcester, Massachusetts, U. S. A.

Branches and Distributors in all Principal Cities

GRATON
1851
& KNIGHT

Concrete on the Medina-Hartland Highway, N. Y. Six miles of durable road. Engineer, J. N. Carlisle, State Highway Department. Contractor, J. A. Culkin, Oswego, N. Y.

You can live beside a concrete road or drive upon it free from the annoyance of dust and mud. Nature keeps it clean. Automobiles do not skid on concrete roads.

How Concrete Roads Increase the Value of Your Automobile

ITS WORTH is not what you put into it, but what you get out of it—how far, how quickly, how comfortably, how cheaply and how safely it carries you—in other words, upon the mileage of good roads available and upon the continuity of that mileage.

Permanent roads should be built in *connected systems—not* in scattered stretches, with ruts and mud-holes in between. And they should be built of concrete.

Concrete roads not only add to the safety and comfort of driving, they very much reduce operating costs. Less gasoline is required on the hard, even surface; tires are not strained and bruised as when lunging and plunging over ruts, stones and holes. The chassis suffers none of the racking of rough going. It lasts longer and keeps in much better repair.

The motorist is quite as much interested in concrete roads from the standpoint of low maintenance cost as from the standpoint of comfortable driving. It is chiefly the extensive motor traffic which is tearing our highways to pieces, involving repair bills so heavy that sooner or later the burden is likely to be collected back in higher license fees.

For the sake of his pocket book, as well as for safe, comfortable driving, the motorist should actively promote good roads bond issues to build at once needed systems of permanent highways.

Concerted action is certain to be felt by your road authorities. We have convincing facts and figures about the durability of concrete. It is most suitable for road work as it is for the building of great engineering structures, dams, bridges, aqueducts, etc. Write for Bulletin No. 136.

PORTLAND CEMENT ASSOCIATION

Offices at

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Hurt Building
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NEW YORK
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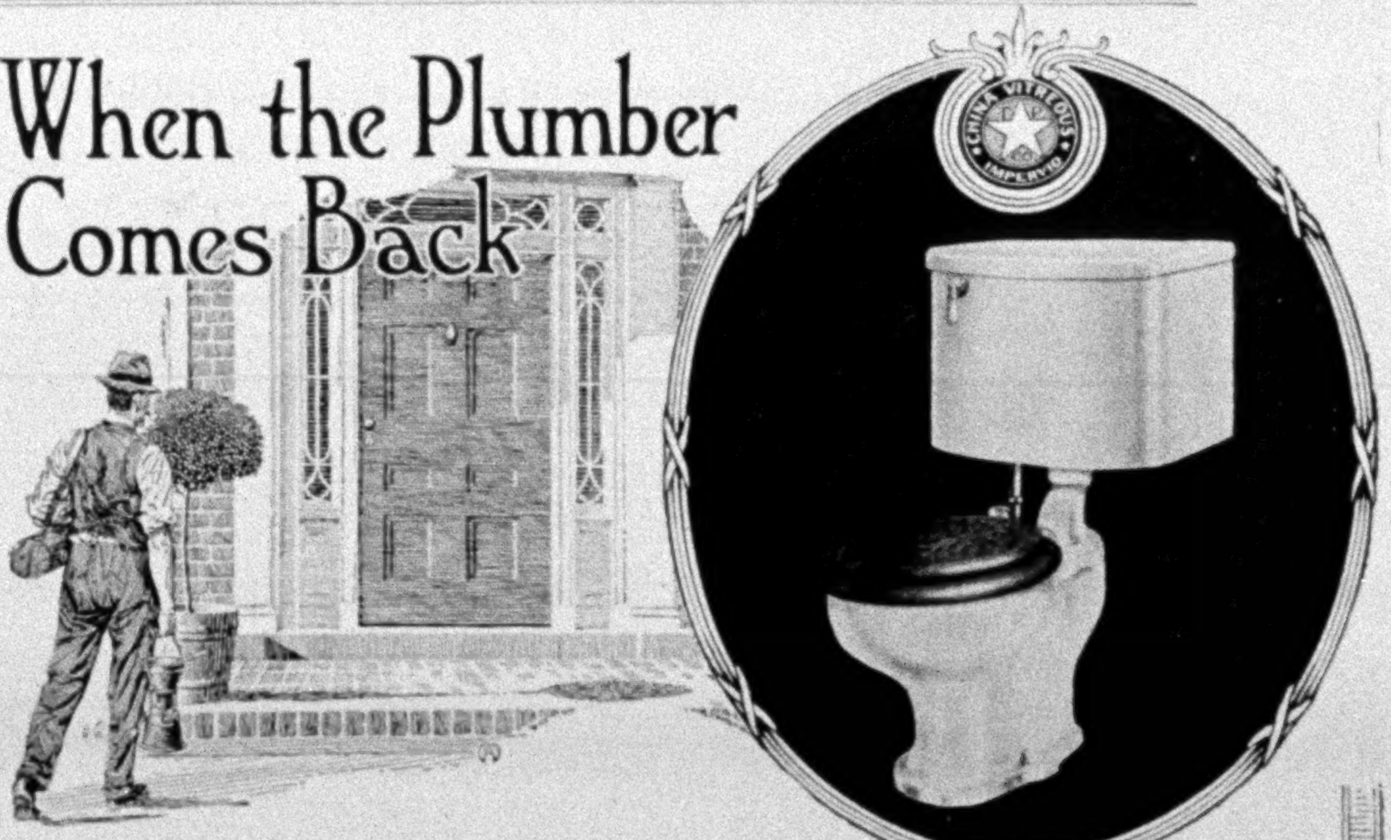
CONCRETE FOR PERMANENCE

When the Plumber Comes Back



Just as truly as you're living, he'll be back—if you don't make sure you have the right kind of plumbing in the first place.

THE TRENTON POTTERIES CO.
SI-WEL-CLO
SILENT CLOSET

And every reset water closet, every kitchen sink or laundry tub he replaces, will make you wish you had heeded our word and bought *good* plumbing. For the plumber's time is almost half your expense, and no plumbing fixture we make will cost as much as an inferior one, plus replacement, plus plumber's time.

THE TRENTON POTTERIES COMPANY

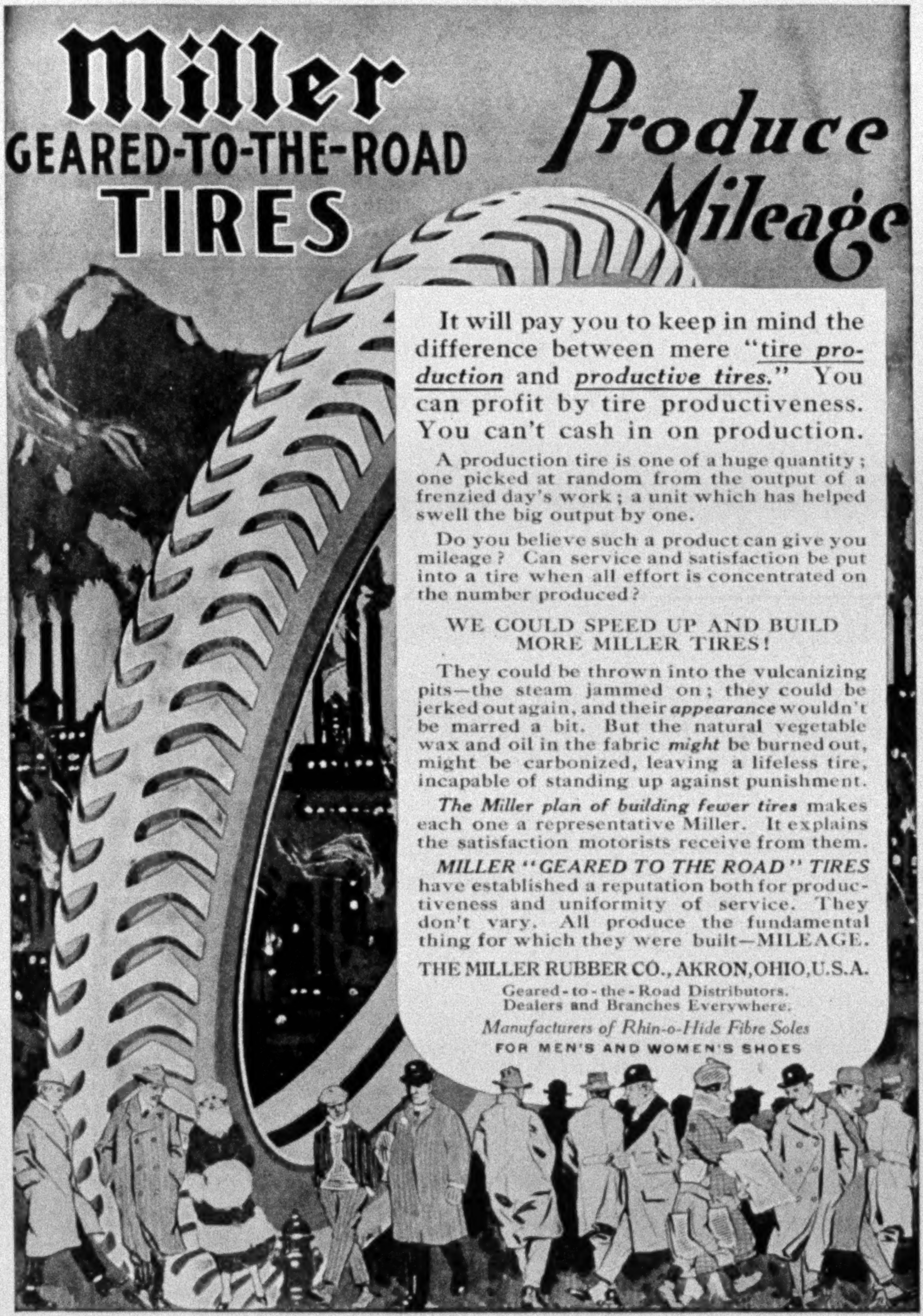
"Impervio" China *and* "Ideal" Porcelain

is virtually a home insurance. So hard is the glaze baked on that any amount of service will not mar its beauty and usefulness. A dampened cloth removes any dirt easily because of this density of the glaze. Pure white, glistening "Impervio" China and "Ideal" Porcelain will make *your* bathroom, kitchen and laundry showrooms of your home. This is not necessarily true of all plumbing fixtures. All-clay plumbing fixtures have not the same durability and richness of glaze. There is only one way to be *sure* of getting the right kind. Specify the ware of a reliable manufacturer and look for the trade-mark before installing.

BATHROOMS OF CHARACTER

Your architect or plumber will tell you that you are buying right if your goods bear the "Star within the Circle" trade-mark. Our interesting and instructive book, "Bathrooms of Character," will aid you in selecting the right plumbing fixtures. Ask for Booklet P-27.

THE TRENTON POTTERIES COMPANY
TRENTON, NEW JERSEY, U. S. A.
MAKERS OF THE SILENT SI-WEL-CLO CLOSET



Miller
GEARED-TO-THE-ROAD TIRES

Produce Mileage

It will pay you to keep in mind the difference between mere "tire *production* and *productive tires*." You can profit by tire productiveness. You can't cash in on production.

A production tire is one of a huge quantity; one picked at random from the output of a frenzied day's work; a unit which has helped swell the big output by one.

Do you believe such a product can give you mileage? Can service and satisfaction be put into a tire when all effort is concentrated on the number produced?

WE COULD SPEED UP AND BUILD MORE MILLER TIRES!

They could be thrown into the vulcanizing pits—the steam jammed on; they could be jerked out again, and their *appearance* wouldn't be marred a bit. But the natural vegetable wax and oil in the fabric *might* be burned out, might be carbonized, leaving a lifeless tire, incapable of standing up against punishment.

The Miller plan of building fewer tires makes each one a representative Miller. It explains the satisfaction motorists receive from them.

MILLER "GEARED TO THE ROAD" TIRES have established a reputation both for productiveness and uniformity of service. They don't vary. All produce the fundamental thing for which they were built—MILEAGE.

THE MILLER RUBBER CO., AKRON, OHIO, U.S.A.

Geared-to-the-Road Distributors.
Dealers and Branches Everywhere.

Manufacturers of Rhin-o-Hide Fibre Soles
FOR MEN'S AND WOMEN'S SHOES

Manufacturers of the famous "Miller Standard" line of Druggists' Sundries, Surgeon's Gloves, Balloons, Novelties, Etc.

The architect conceived this charming house and garage together, built in harmony in the new Color Stucco

New information for home builders

You can have a home as beautiful and charming as this and yet it will be economical to build and cost you almost nothing for painting and repairs. It will be cool in summer, easy to heat in winter, and will resist fire.

This is a great deal; but you can get it all by building your home in the New Kind of Color Stucco. The finish coat of this new stucco is made of Atlas-White Cement and variously colored marble or granite screenings, colored sand or gravel, etc. Its warm tones are variegated—not monotones—and give charm and individuality to the whole surface.

These charming effects are described and illustrated in colors in our Book for Home Builders. Ask for a copy—use the coupon. Also ask your architect about Color Stucco.

The Atlas Portland Cement Company

Members of the Portland Cement Association

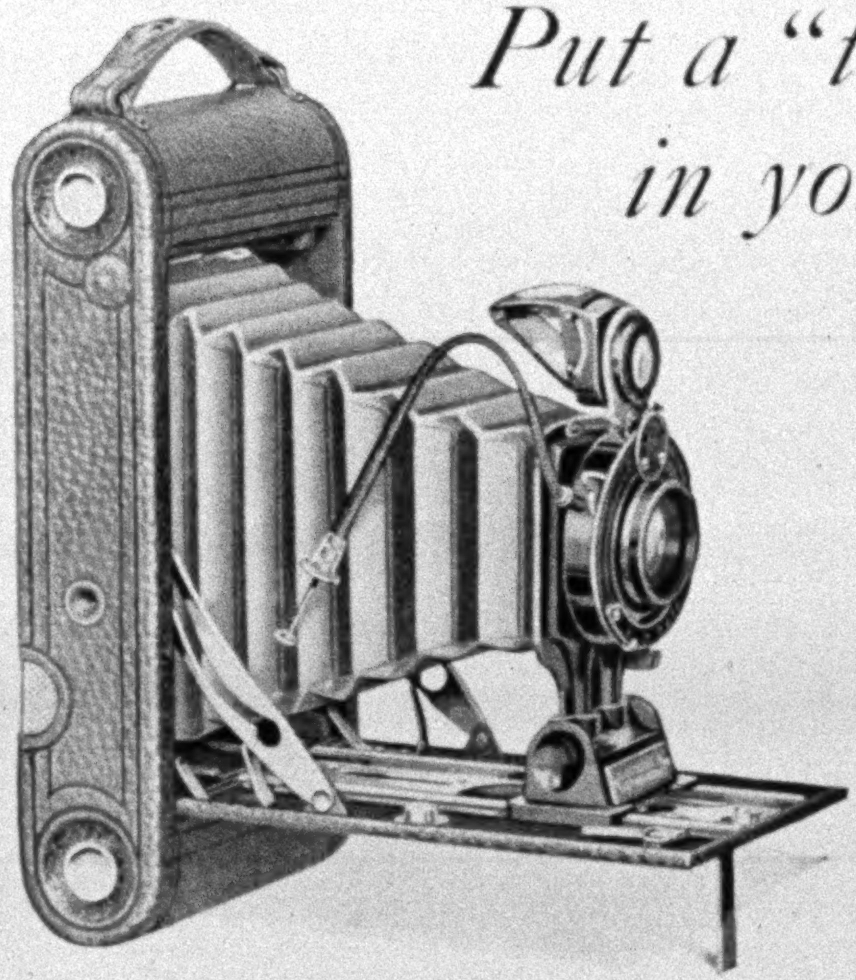
New York Chicago Phila. Boston St. Louis Minneapolis Des Moines Dayton Savannah

ATLAS WHITE

WHITE ATLAS PORTLAND CEMENT NEW YORK, N.Y.

The Atlas Portland Cement Co., 30 Broad Street, New York, or Corn Exchange Bank Building, Chicago. Send to name and address below book on Color Stucco. I am interested in Houses costing about $ .... Garages costing about $ ....

Put a "two-c"
in your pocket.



It fits.

The 2C KODAK Jr.

For pictures of the somewhat elongated post-card shape, but just a trifle smaller,—2 7/8 x 4 7/8 inches. And this elongated shape in the picture makes possible a slim, thin camera, that *fits the pocket.*

The 2C Autographic Kodak Junior has a capacity of ten exposures without reloading, it has the Kodak Ball Bearing shutter with cable release, working at speeds of 1/25, 1/50 and 1/100 of a second and of course the usual "bulb" and time actions. The camera has brilliant reversible finder, two tripod sockets, black leather bellows, is covered with fine grain leather, is well made and beautifully finished. It is autographic, of course, and is extremely simple to use.

Furnished with a choice of lens equipment as listed below:

No. 2C Autographic Kodak Jr., meniscus achromatic lens, ...	$12.00
Ditto, with Rapid Rectilinear lens, ...	14.00
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All Dealers'.

EASTMAN KODAK CO., Rochester, N. Y., *The Kodak City.*

TWENTIETH CENTURY MEN CARRY CORONA

EXECUTIVES whose hours are priceless, the kind of men who travel on excess-fare trains, make *riding* time *writing* time with the aid of Corona.

Business "leaks" which can cost millions are prevented by the coronatyping of confidential matters.

CORONA

The Personal Writing Machine

owing to its portability and its guarantee of privacy, saves your seconds and—your secrets.

This six-pound machine lacks nothing in completeness, because it is compact; its simplicity of design and operation enables any one able to write to type and copy—conveniently, easily, legibly, and beautifully—without instruction.

Corona and case costs $50

Necessity for extra baggage is eliminated by the fact that special two-story bags and Gladstones by "Likly" accommodate Corona and a traveling kit.

To get "The Personal Touch in Typing," be sure and ask for Booklet 27

Corona Typewriter Co., Inc., Groton, N.Y.
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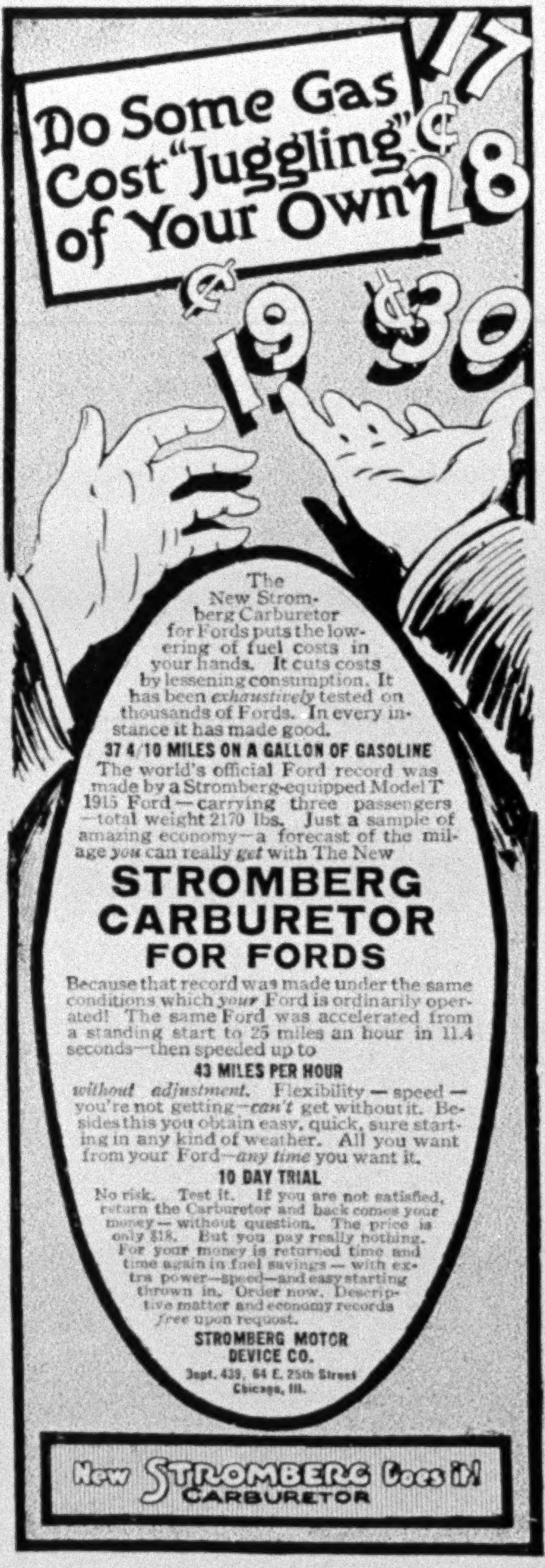
Agencies in principal cities



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The New Stromberg Carburetor for Fords puts the lowering of fuel costs in your hands. It cuts costs by lessening consumption. It has been *exhaustively* tested on thousands of Fords. In every instance it has made good.

37 4/10 MILES ON A GALLON OF GASOLINE

The world's official Ford record was made by a Stromberg-equipped Model T 1915 Ford—carrying three passengers—total weight 2170 lbs. Just a sample of amazing economy—a forecast of the mileage *you* can really *get* with The New

STROMBERG CARBURETOR FOR FORDS

Because that record was made under the same conditions which *your* Ford is ordinarily operated! The same Ford was accelerated from a standing start to 25 miles an hour in 11.4 seconds—then speeded up to

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I want to convince you of the real quality of my J. R. W. Cigar. I know how difficult it is to persuade a man to try a cigar he has never smoked. But I also know that once you have tasted my J. R. W. cigar you will be a lifelong customer.

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J.R.W.
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18,000 Men Agree With Me

18,000 men, who smoke over 2,000,000 cigars a year, have been convinced of the wonderful quality of my cigar.

They, too, were dubious at first, but my first few cigars convinced them. How do I do it? Simply by giving them the best tobacco value possible. When you buy my cigar you are paying for nothing but straight tobacco goodness. No salesmen's expenses, no dealer's profit, no store upkeep are included in the price of the cigar.

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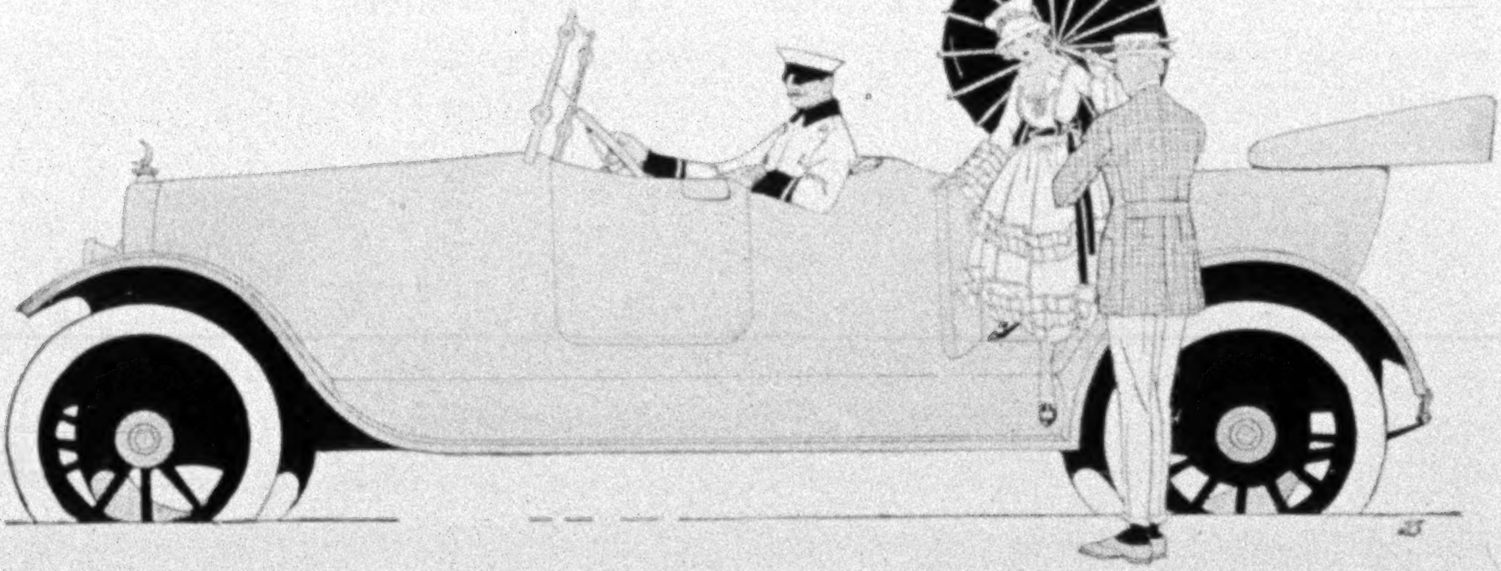

On the Show Streets of the World

—the Moon car is conspicuous for its downright good looks. Its double-cowled Delaunay-Belleville body design, usually associated with the higher-priced European models—and its charming Spanish leather upholstery give the Moon car a Patrician look—surprising in a car of its cost. With a mechanism which is famous in the field of automobile engineering, the Moon Car justifies the judgment and good taste of exacting buyers who appreciate the niceties of life.

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MOON CARS

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Red Seal Continental motor—Rayfield carburetor—smart slanting windshield—long wheel base—vacuum feed—Delco starting, lighting and ignition system—one-man top—motor-driven tire pump—Gemmer steering gear—extra long springs—complete chassis and body equipment and appointments.

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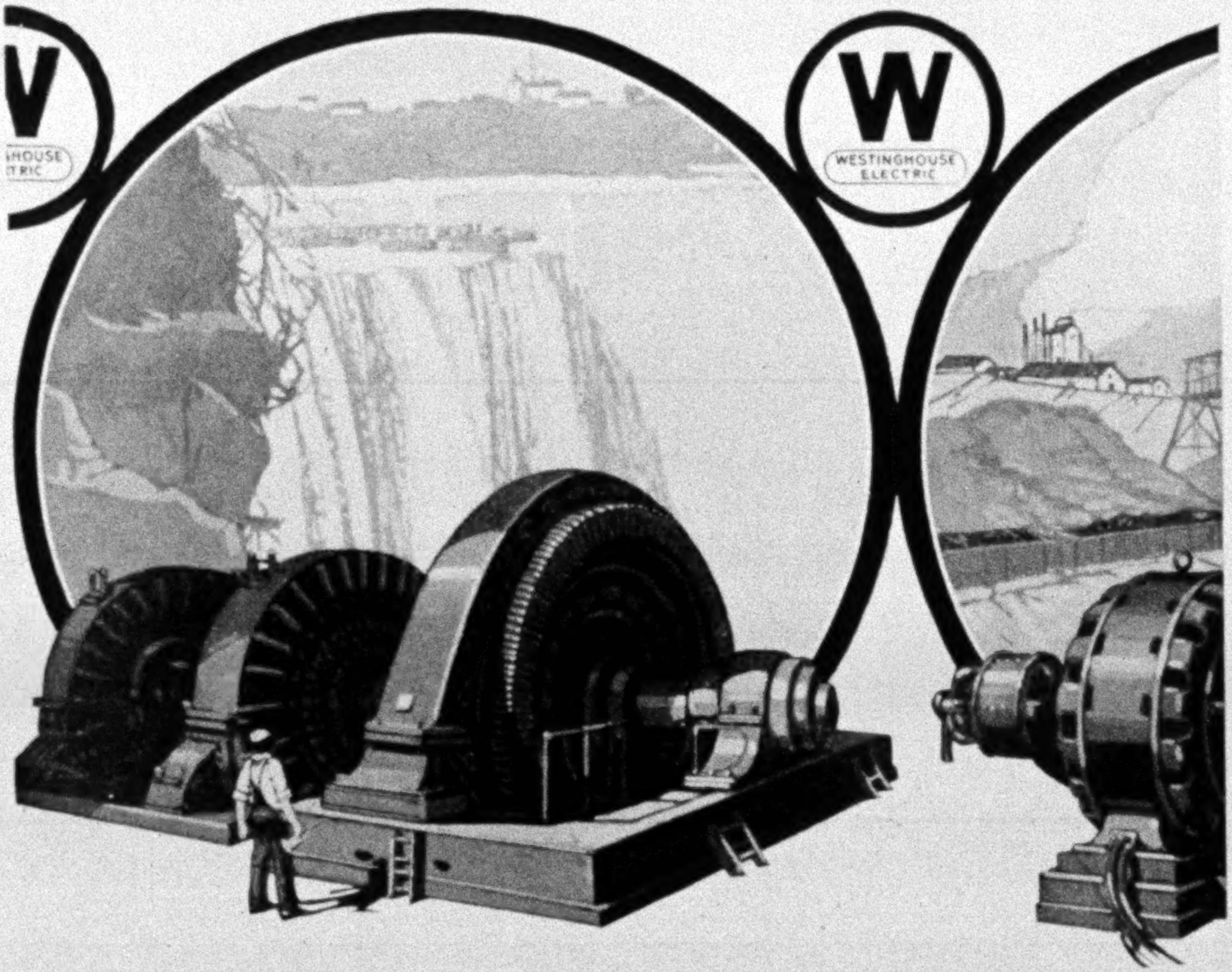

New Forces from Old Sources

Fire and water have built civilization out of barbarism and savagery.

But for generations man used these sources of energy clumsily, through machinery that was expensive in operation, limited in capacity, and extremely local in application.

Today we are entering upon a new age of greater achievement because we have learned to translate natural resources into a more efficient, economical, and convenient form of energy—electricity.

It can be generated at lower cost, transported to greater distances, transformed at will into light, heat, and power.

Herein is one of the great contributions to civilization by George Westinghouse and his successors: that they have not confined their activities to the designing of apparatus for the *use* of electricity alone.

They went back of the current to the primal source—that power might be more economically generated and more widely distributed.

Westinghouse water-turbine, generators were the first to turn the power of Niagara to man's advantage.

Westinghouse stokers under thousands of boilers save labor, improve combustion of coal, and therefore reduce the cost of steam.

Westinghouse

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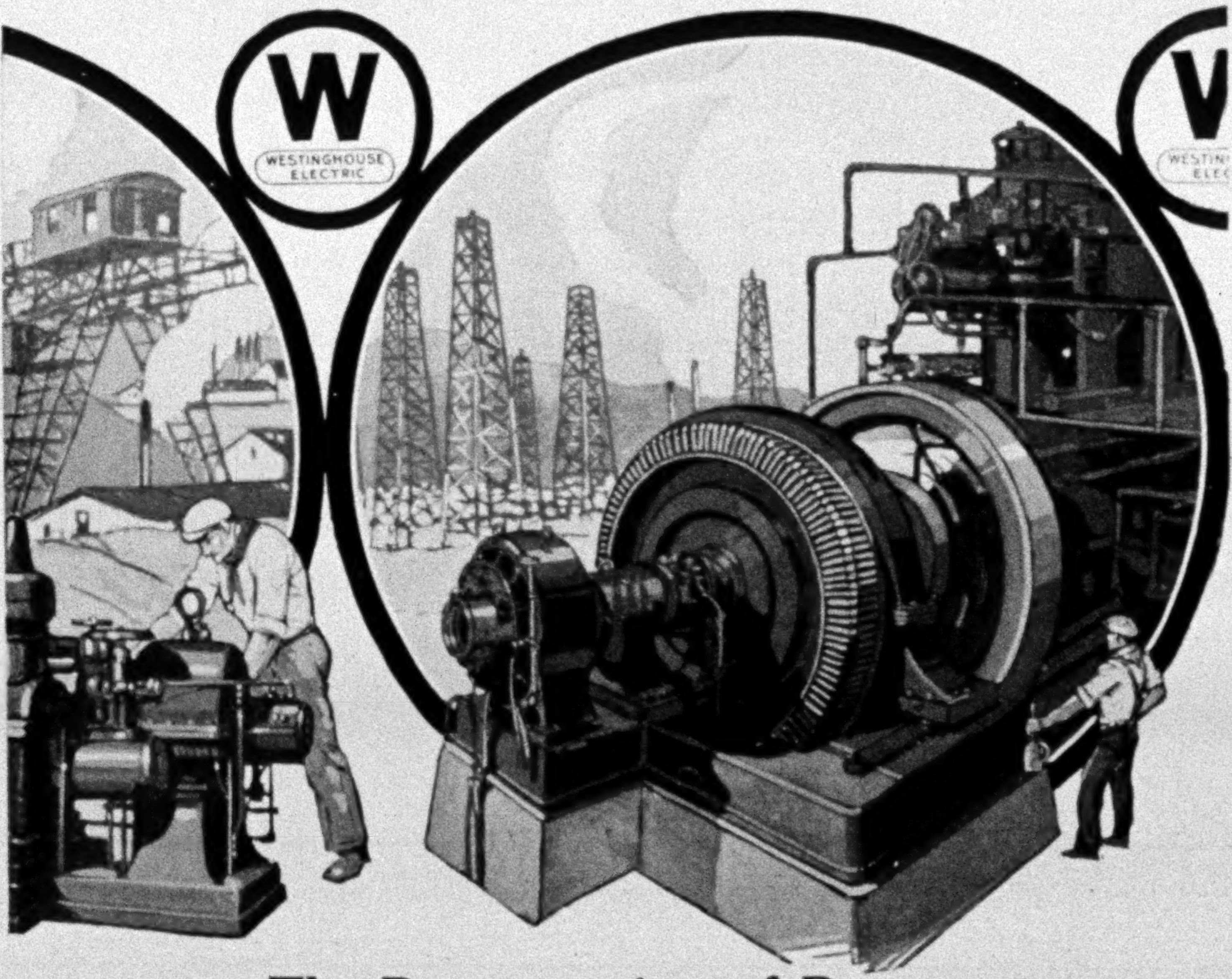

The Regeneration of Power

Westinghouse turbo-generators in Central Stations and power plants utilize steam more economically and turn it into the alternating form of current which, largely through the development of Westinghouse apparatus for transformation and conversion, has made possible a wider distribution of light, heat, and power.

Where gas or oil are more economical, there again you find Westinghouse generators translating engine-power into the invisible current that does more work at less expense.

Whatever your individual power problem, whether of generation or application, Westinghouse engineers can help you arrive at the most economical and efficient type of apparatus, and Westinghouse manufacturing facilities cover everything needed for complete equipment of any power plant, large or small.

Westinghouse Electric engineering and designing are equally prominent in the domain of current-using apparatus of every type, from electric locomotives and steel-mill motors to fans and electric ware for the home.

Westinghouse Electric equipment for power plants includes, among other items, stokers, condensers, turbo-generator units, generators, transformers, rotary converters, motors, switchboards, meters, etc., etc.

WESTINGHOUSE ELECTRIC & MANUFACTURING CO.
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Westinghouse

PRIME MOVERS AND GENERATORS

"Mention the Geographic—It identifies you."

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Why in dusty places do we instinctively breathe through the nose?

Breathing through the nose protects the mouth. Dust is always irritating, very frequently infectious, and **the mouth is the place where disease germs get their start.**

To keep the mouth clean and to guard against infection, use—

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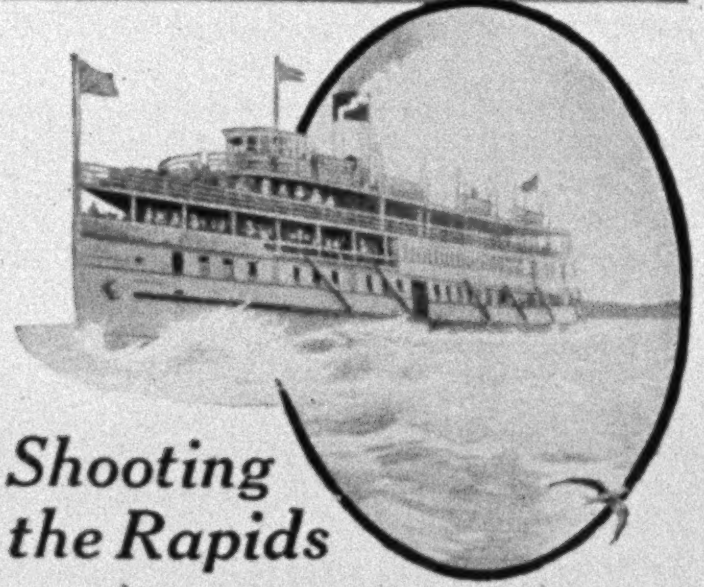
(one teaspoonful in a little water) as a mouth wash night and morning.

No better health insurance is obtainable; the premiums are not large, but the benefits are beyond calculation.

The Oakland Chemical Co., 10 Astor Place, N. Y.

Dioxogen
The Oakland Chemical

Niagara to the Sea



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THE most satisfying trip in America for health and recreation. Almost 1000 miles of lakes, rivers and rapids, including the Thousand Islands, the exciting descent of the marvelous rapids, the historic associations of Montreal, Quaint old Quebec, with its famous miracle-working shrine of Ste. Anne de Beaupré and the famous Saguenay River with its stupendous Capes, "Trinity" and "Eternity," higher than Gibraltar.

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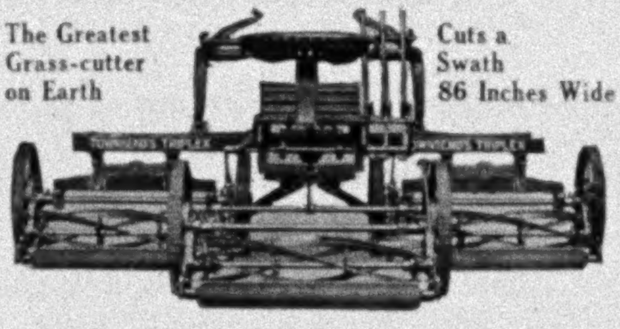
TOWNSEND'S TRIPLEX

The Greatest Grass-cutter on Earth

Cuts a Swath 86 Inches Wide



Floats Over the Uneven Ground as a Ship Rides the Waves.

One mower may be climbing a knoll, the second skimming a level, while the third pares a hollow. Drawn by one horse and operated by one man, the TRIPLEX will mow more lawn in a day than the best motor mower ever made; cut it better and at a fraction of the cost.

Drawn by one horse and operated by one man, it will mow more lawn in a day than any three ordinary horse-drawn mowers with three horses and three men.

Does not smash the grass to earth and plaster it in the mud in springtime, neither does it crush the life out of the grass between hot rollers and hard, hot ground in summer, as does the motor mower.

The public is warned not to purchase mowers infringing the Townsend Patent, No. 1,209,519, December 19th, 1916.

Write for catalog illustrating all types of Lawn Mowers.

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The Meaning of MAZDA

MAZDA is the trademark of a world-wide service to certain lamp manufacturers. Its purpose is to collect and select scientific and practical information concerning progress and developments in the art of incandescent lamp manufacturing and to distribute this information to the companies entitled to receive this Service. MAZDA Service is centered in the Research Laboratories of the General Electric Company at Schenectady, New York. The mark MAZDA can appear only on lamps which meet the standards of MAZDA Service. It is thus an assurance of quality. This trademark is the property of the General Electric Company.

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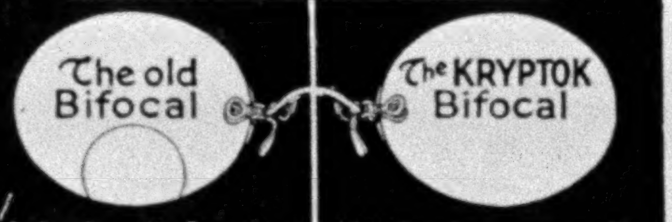
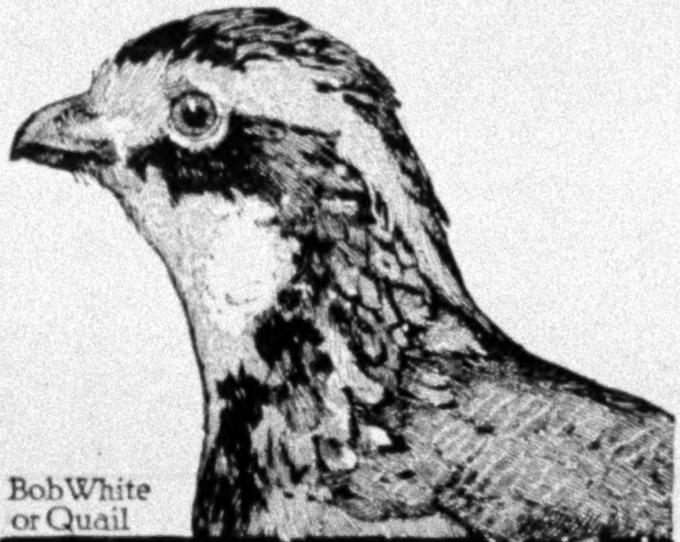


With the disfiguring seam or hump

With clear smooth even surfaces



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They tell all about game farming—the profit and pleasure to be obtained from it. "Game Farming for Profit and Pleasure" is sent free on request. It treats of the subject as a whole; describes the many game birds, tells of their food and habits, etc. "American Pheasant Breeding and Shooting" is sent on receipt of 10c in stamps. It is a complete manual on the subject.

HERCULES POWDER CO.
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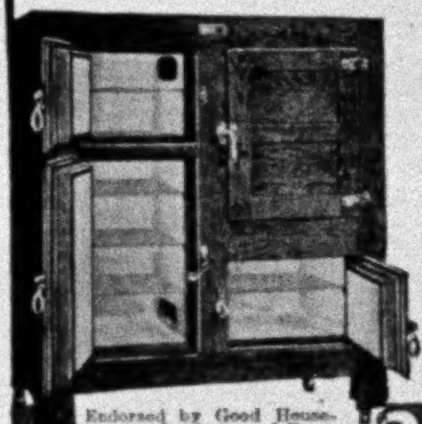
AMERICAN PHEASANT BREEDING AND SHOOTING
GAME FARMING
Profit and Pleasure



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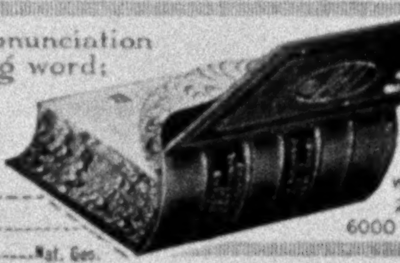

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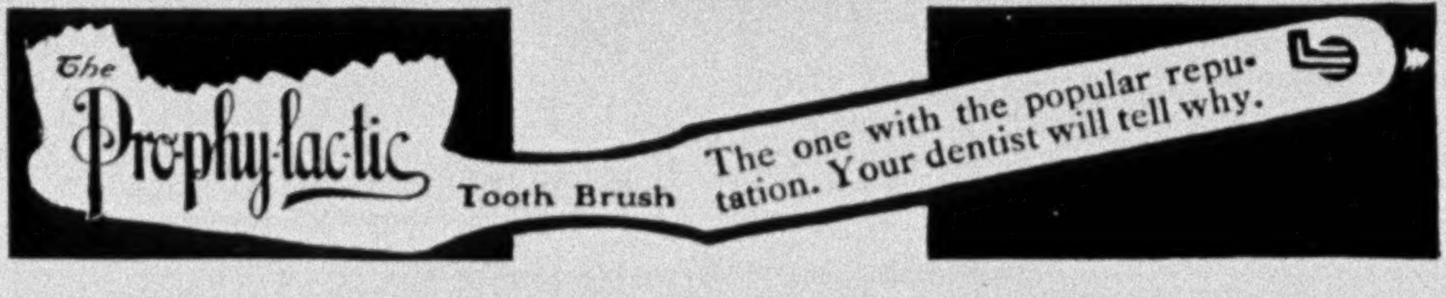
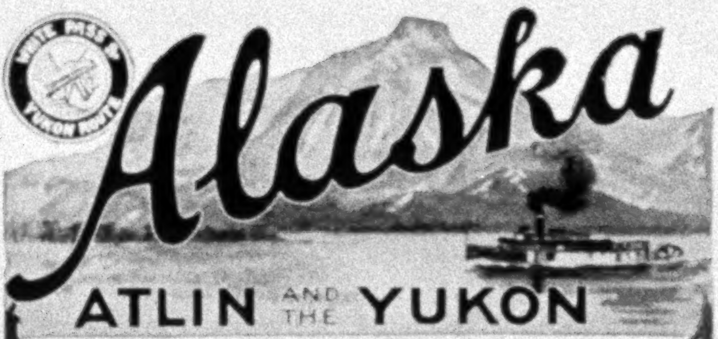


The Pro-phy-lac-tic Tooth Brush
The one with the popular reputation. Your dentist will tell why.



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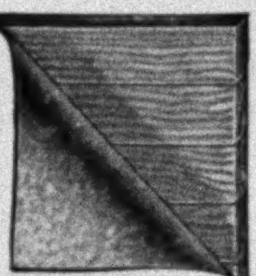

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Compo-Board
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is actually in a class by itself. It is the *only* wall-board made with a center core of kiln-dried wood slats.

That's what makes the difference—in strength, in durability, in its moisture-proofness, in its ability to keep out cold in winter and heat in summer.

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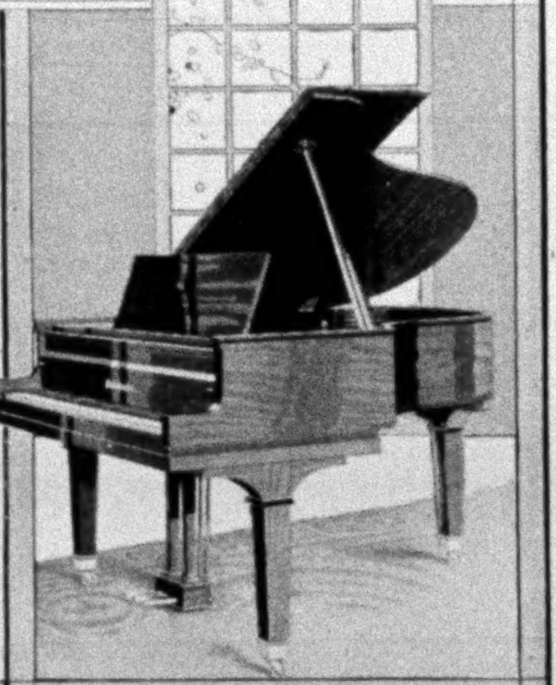

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THE BALDWIN tone is intimate, sympathetic, warm, mellow. Because of these human qualities, the really great artists such as Levitzki, De Pachman, Sembrich, Bachaus, Alda, Scharwenka, La Forge and Eddy Brown are satisfied with no other. In the opinion of those who rate pianos according to true musical worth, the sheer loveliness of its tone places the Baldwin beyond comparison.

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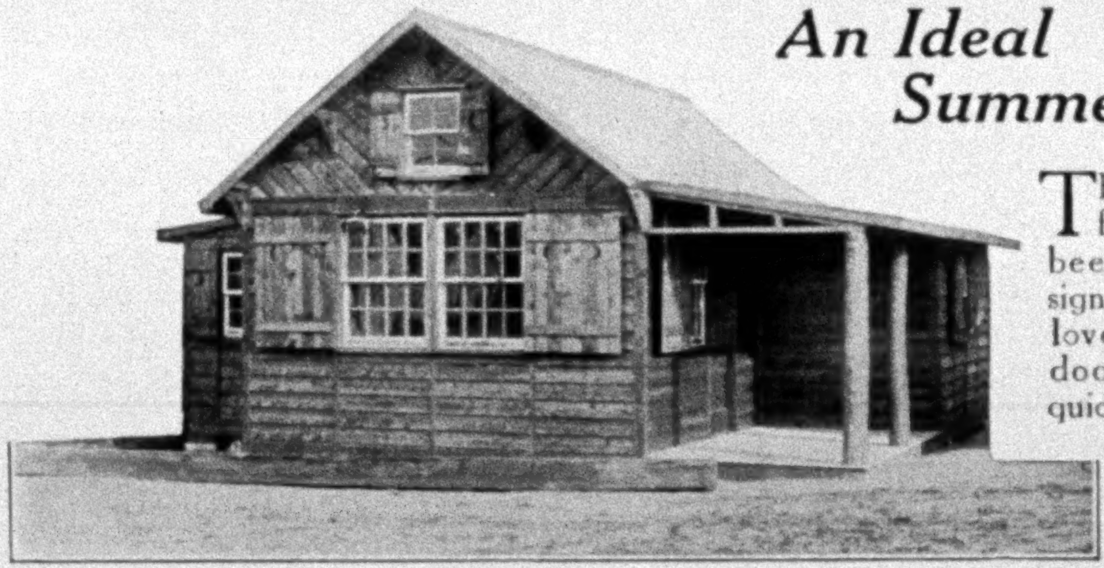

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THIS durable, comfortable camp has been specially designed for people who love the great outdoors. It can be quickly put up by unskilled labor on the banks of your favorite stream.

THIS camp is of single wall construction, unlike the all year round larger Bossert-built houses. It is not painted, but stained a beautiful brown color with creosote, which not only preserves the wood, but brings out beautifully the natural grain.

Contains three bed-rooms, a 12x15 living room, and a 6x9 kitchen in extension. Vital economies effected by the Bossert method of buying and construction enable us to offer this camp at

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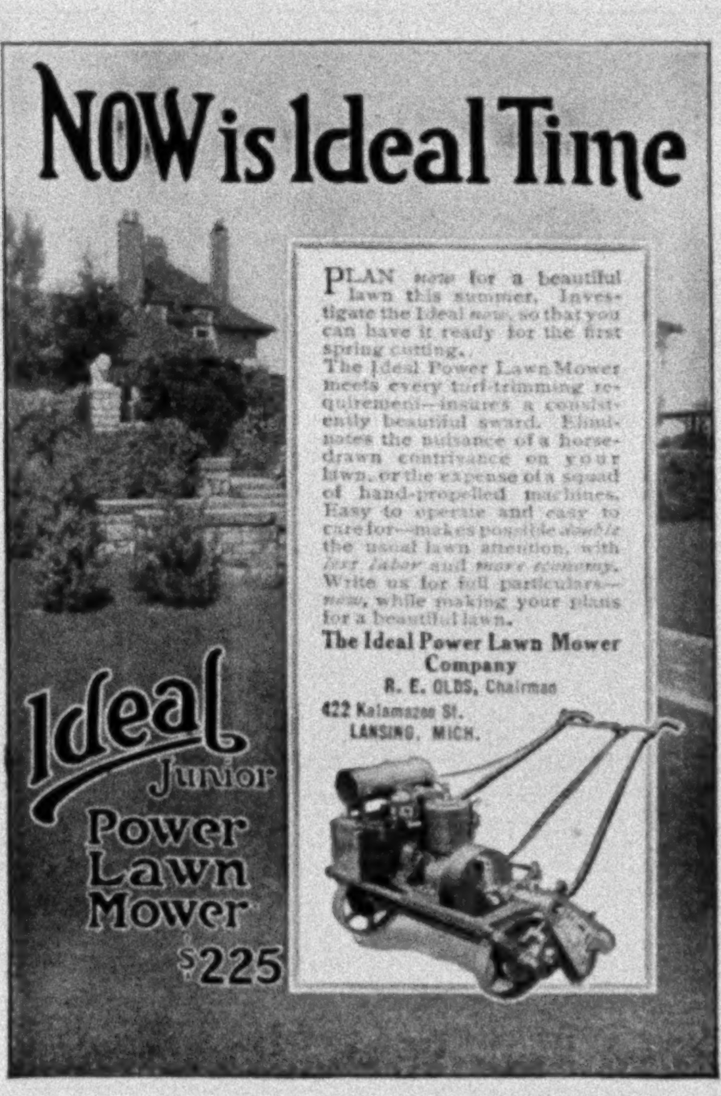

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PLAN *now* for a beautiful lawn this summer. Investigate the Ideal *now*, so that you can have it ready for the first spring cutting.

The Ideal Power Lawn Mower meets every turf-trimming requirement—insures a consistently beautiful sward. Eliminates the nuisance of a horse-drawn contrivance on your lawn, or the expense of a squad of hand-propelled machines. Easy to operate and easy to care for—makes possible *double* the usual lawn attention, with *less labor* and *more economy*. Write us for full particulars—*now*, while making your plans for a beautiful lawn.

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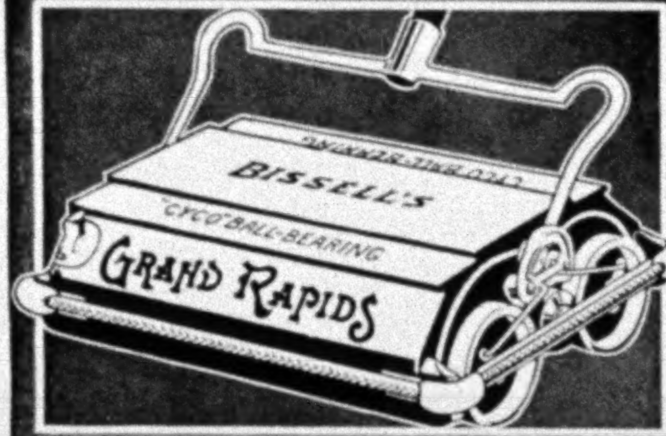

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While progressive homes may now be equipped with various types of cleaning devices, not one of these, even Bissell's Combination Vacuum Sweeper, can take the place of BISSELL'S CARPET SWEEPER.

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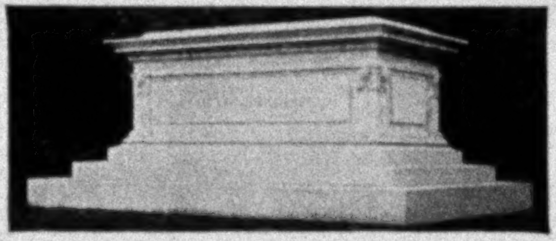

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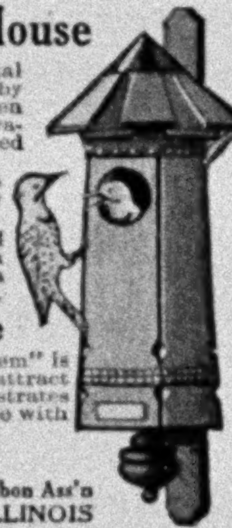

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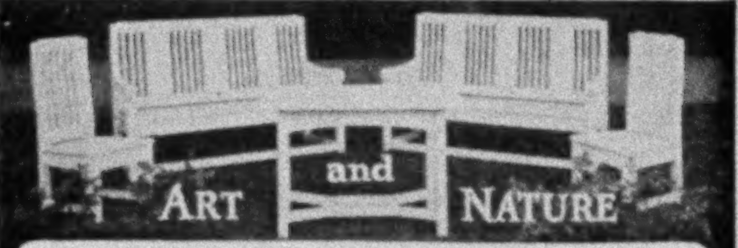

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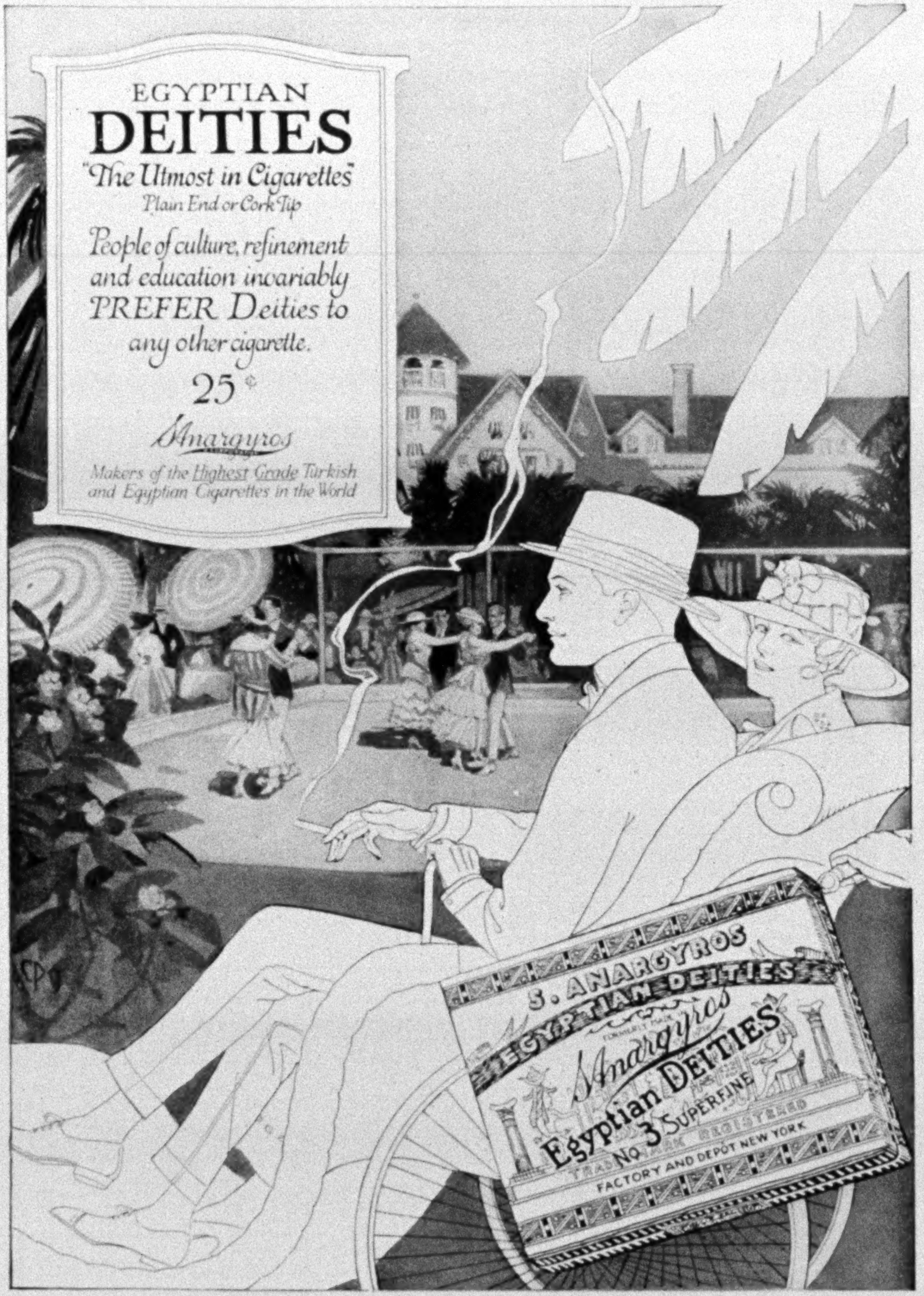

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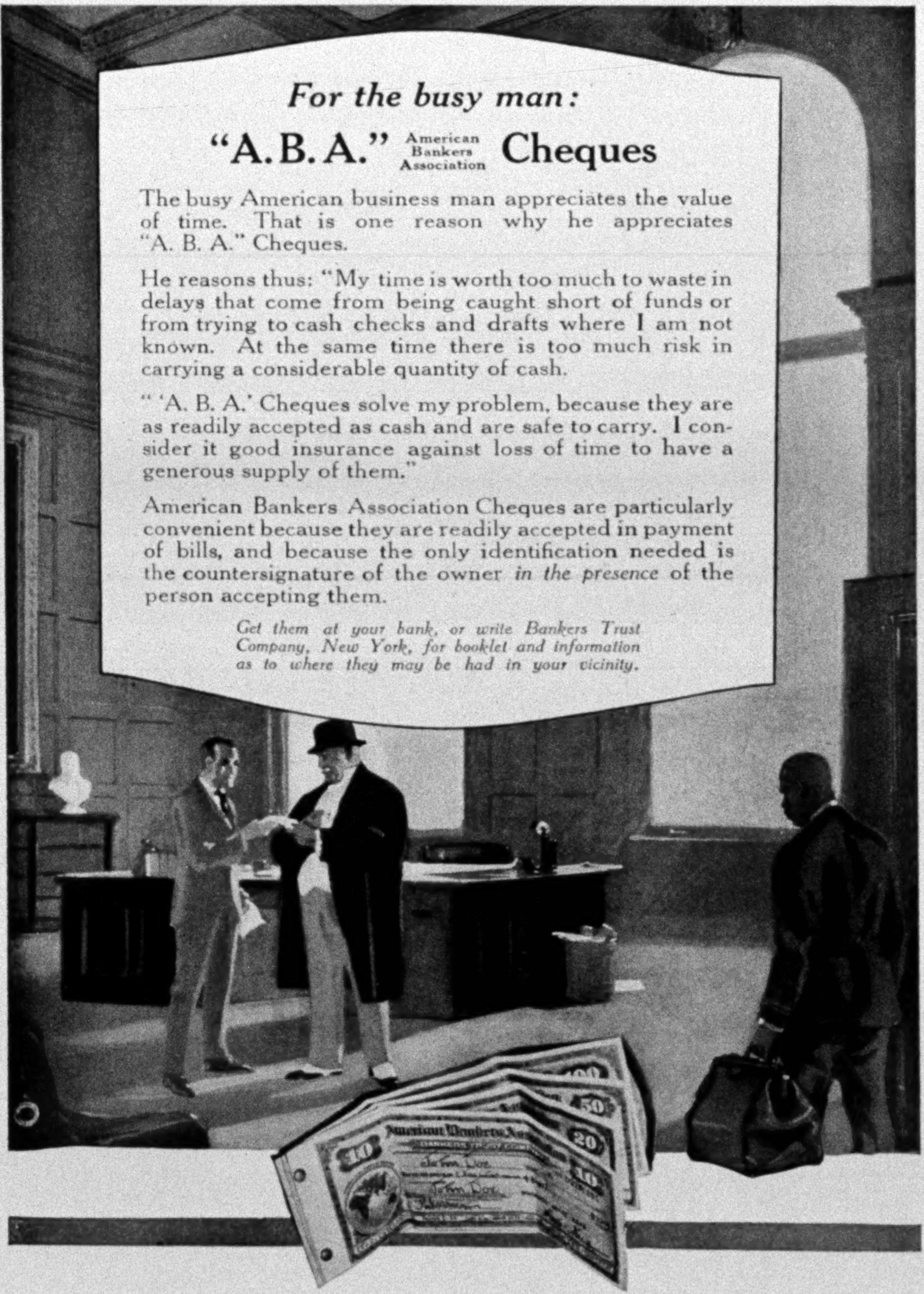

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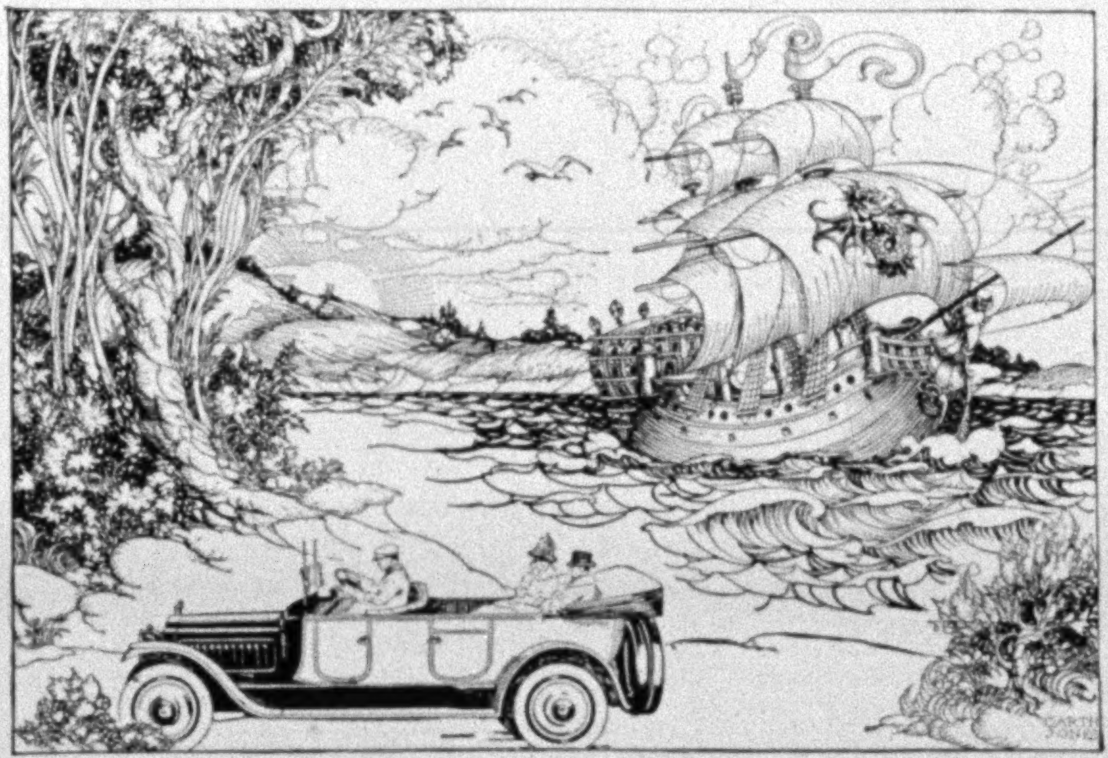

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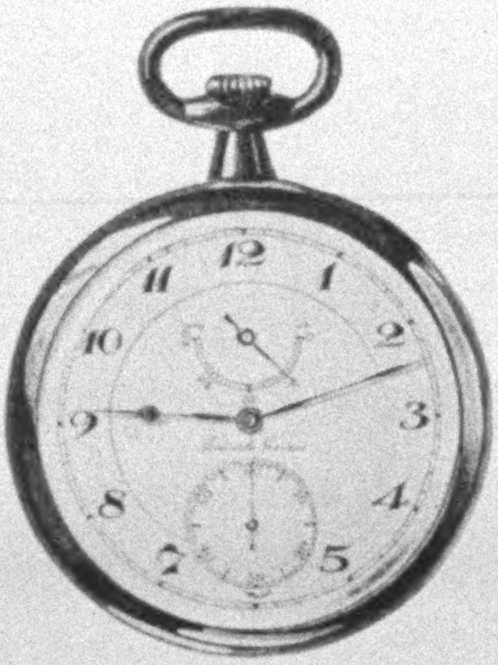

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